Federal Court  Cour fédérale

Date: 20170224

Docket: T-2025-11

Citation: 2017 FC 207

Ottawa, Ontario, February 24, 2017

PRESENT: The Honourable Mr. Justice Roy

BETWEEN:

BOMBARDIER RECREATIONAL PRODUCTS INC.

Plaintiff/Defendant by Counterclaim

and

ARCTIC CAT INC. AND ARCTIC CAT SALES INC.

Defendants/Plaintiffs by Counterclaim

PUBLIC JUDGMENT AND REASONS

(Confidential Judgment and Reasons issued February 24, 2017)

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PUBLIC JUDGMENT AND REASONS

I. Introduction

[1] This is an action for infringement under the *Patent Act* (RSC, 1985, c P 4) [*Patent Act*] launched by Bombardier Recreational Products Inc., a manufacturer of snowmobiles with its headquarters in Canada, against another manufacturer of snowmobiles, Arctic Cat, Inc., and its wholly-owned subsidiary, Arctic Cat Sales Inc., which is responsible for marketing and sales, as well as service activities, for Arctic Cat snowmobiles.

[2] Bombardier Recreational Products Inc. (BRP or the Plaintiff) is incorporated pursuant to the *Canada Business Corporations Act* (RSC, 1985, c C-44). It manufactures and sells, among other recreational products, snowmobiles under the trade-mark "Ski-Doo". Its head office remains in Valcourt, Quebec, where it started its operations. From a division of Bombardier Inc. that manufactured and sold snowmobiles, Bombardier Recreational Products Inc. was spun off Bombardier Inc. in 2003. It now operates on its own as a corporate entity.

[3] Similarly, the head office of the Defendants, both corporations incorporated under laws of the State of Minnesota, has been and continues to be located in Thief River, in the State of Minnesota. They are also in the business of manufacturing and selling snowmobiles. Indeed, the evidence at trial showed that the parties compete in the same market together with two other manufacturers, Yamaha and Polaris.

[4] It is not an overstatement to say that the competition between the four main manufacturers in North America is fierce in a market that has been referred to as being “mature”. It appears that the sales of snowmobiles have been declining in the last few years.

[5] Bombardier Recreational Products Inc. takes to court Arctic Cat, Inc. and Arctic Cat Sales Inc. (AC or the Defendants) because it is alleged that AC has infringed four Patents owned by BRP. They are Canadian Patents 2,293,106, 2,485,813, 2,411,964, and 2,350,264. They will be referred to herein as the “106 Patent”, the “813 Patent”, the “964 Patent” and the “264 Patent”.

[6] AC does not only deny in this action infringing the four Patents, but it also asserts the invalidity of each of the Patents for a variety of reasons: anticipation, obviousness, double patenting, indefiniteness, lack of utility, claiming a desired result, claims that are broader than the invention made, and material misrepresentation. As a result, AC counterclaims: it seeks a declaration that the asserted claims of the four Patents are invalid, making them void and of no effect.

[7] This trial also included the evidence about the remedies sought, assuming that there would be a finding of infringement of one or many of the claims asserted by BRP, with the claims being ruled to be valid. BRP is asking for:

- A declaration that the four Patents have been infringed by AC;

- A declaration that the said four Patents are valid; I note that there is no allegation that BRP does not own the Patents-in-suit;

- An order, in the nature of a permanent injunction, restraining AC from infringing all and any of the four Patents-in-suit as well as selling, making, using or distributing in Canada any snowmobile or component thereof that would infringe any of the four Patents; furthermore, the order sough would restrain AC from inducing the sale, the order for sale, the fabrication, the construction, the use or distribution in Canada of a snowmobile or component thereof infringing any of the four Patents;

- Although the Plaintiff is not seeking an accounting of profits by the Defendants, it seeks damages that include an assessment of profits made by AC for selling snowmobiles that would have been sold by BRP but for the infringement of patents. As for the remaining snowmobiles sold by AC using the technology developed and patented by BRP, a reasonable royalty is sought. BRP is not claiming any more punitive damages, but pre-judgment and post-judgment interest are of course asked for by the Plaintiff;

- For its part, AC calls for a declaration that it did not infringe any of the Patents or that the Patents are invalid in case some claims were ruled to have been infringed;

- Both parties are claiming costs at a higher level than that provided for at Rule 407 of the *Federal Courts Rules* (SOR/98-106), as amended. It was decided that more complete representations will be made on the costs issue once judgment has been rendered. Accordingly, this judgment will not deal with the issue of costs;

- Out of 247 claims coming from the four Patents-in-suit, 56 have been asserted originally by BRP covering some 378 (there continued to be uncertainty as to how many models were captured by the action until the end when counsel for BRP advanced the number 378) snowmobile models manufactured and sold by AC in Canada between the model year 2007 and 2015. This law suit is concerned with some 44 000 snowmobiles, colloquially referred to as "sleds".

II. Description of the Patents

[8] The four Patents at issue in this proceeding cover some 247 claims, of which 49 claims remain asserted following the close of the trial. Three of the Patents (the 106, the 813, and the 964) relate to similar purported inventions, essentially new configurations for a snowmobile, bringing the rider in a more forward position when sitting on the snowmobile, while the fourth Patent (the 264) relates to a frame assembly to be used in the construction of snowmobiles.

A. *The 106 Patent*

[9] The 106 Patent is entitled "Snowmobile" ("Motoneige") and was filed on December 23, 1999. It lists Berthold Fecteau and Bruno Girouard as inventors. The Patent claims a Canadian priority date of December 23, 1998 (from patent application 2,256,944) and a United States priority date of November 26,1999 (from application 60/167, 614); however, during the course of this litigation, the parties came to an agreement to rely on the American priority date. In fact, nothing rides in the end on these various dates. The Patent was laid open to public inspection on

June 23, 2000. The 106 Patent was issued on April 14, 2007, and is in the name of Bombardier Recreational Products Inc.

[10] The 106 Patent makes 80 claims, of which the following four claims remain asserted in the end in this case: 1, 7, 27, and 77. Prior to the claims, the Patent provides a description of the invention, referred to as the disclosure.

[11] The Patent, as well as the 813 and 964 Patents could hardly have been clearer. The first sentence announces that "(t)he present invention concerns the overall design and construction of a snowmobile." It is to be constructed such that the steering control position will be different from the one traditionally found on snowmobiles, where the rider was in an upright position located toward the rear of the vehicle. Being positioned further from the centre of gravity of the snowmobile, the driver would feel strongly the bumps over which the vehicle would be passing; an improved position would minimize the discomfort perceived as the vehicle would travel over uneven terrain.

[12] The conventional design of a snowmobile would be changed with the result that the rider is repositioned. The 106 Patent would therefore seek to reconfigure the snowmobile such that the rider would have to assume a new position. The Patent addresses the position that the rider would have to take in the view of the new configuration that would force the rider to sit closer to the centre of gravity. Measurements involving the centers of gravity of the snowmobile, the snowmobile together with the rider (as a "system") and the center of gravity of the rider are provided and included in the asserted claims.

[13] For instance, claims 1 and 7 are dealing with the distance between the center of gravity of the snowmobile and the center of the gravity of the snowmobile together with the rider. Claim 1 speaks of a distance of 0 cm to 14 cm (inclusive) while Claim 7 situates the distance at 2 cm to 12 cm (inclusive). Claim 27 is interested by the distance between the forward-most drive track axle and the rider's center of gravity. Claim 77 deals with the angle calculated by having a line go through the center of gravity of the rider, and one going through the center of gravity of the system (center of gravity of the snowmobile with rider). These two lines will form an angle with horizontal that will be between 45º and 75º inclusive.

[14] The claims are organized in the same manner. They are cascading from an independent claim that speaks of "the snowmobile constructed and arranged such that" the measurements and angles will result.

(1) Disclosure

[15] The invention described in the 106 Patent is said to be a "snowmobile where, among other features, the steering control position, the seating position, and the position of the footrests are arranged in relation to one another so that the rider's center of gravity is closer to the center of gravity of the vehicle than on a conventional snowmobile" (106 Patent, page 1). The new configuration is said to improve over a conventional snowmobile by repositioning the rider to minimize the transfer of forces as the snowmobile passes over bumpy terrain.

[16] The Patent states that a person skilled in the art would understand that a snowmobile has one centre of gravity without the rider and (usually) a different centre of gravity with the rider included. The rider also has its own centre of gravity.

[17] As already indicated, the Patent describes certain distances which can be measured on a snowmobile by comparing vertical lines passing through certain points on the snowmobile: a distance between a vertical line passing through the centre of gravity of the snowmobile without the rider and a vertical line passing through the centre of gravity of the snowmobile with the rider (referred to as distance "*a*"), a distance between a vertical line passing through the forward-most drive axle and a vertical line passing through the centre of gravity of the rider (referred to as distance "*z*"), a distance between a vertical line passing through the centre of gravity of the snowmobile with the rider and a vertical line passing through the centre of gravity of the rider (referred to as distance "*x*"), and a distance " between a vertical line passing through the centre of gravity of the snowmobile without the rider and a vertical line passing through the centre of gravity of the rider (referred to as distance "*y*"). For each distance, the Patent describes a range of preferred lengths in centimetres.

[18] The Patent describes a series of angles which can be measured on a snowmobile by comparing a line passing through two points on the vehicle with a horizontal line: an angle from a line passing through the centre of gravity of the snowmobile without the rider and the center of gravity with the rider (referred to as angle "λ"), an angle from a line passing through the forward-most drive track axle and the centre of gravity of the rider (referred to as angle "π"), an angle from a line passing through the centre of gravity of the snowmobile without the rider and the center of

gravity of the rider (referred to as angle "ω"), and an angle from a line passing through the centre of gravity of the snowmobile with the rider and the centre of gravity of the rider (referred to as angle "θ"). For each angle, the Patent describes in a cascading way a range of preferred sizes in degrees.

[19] The Patent describes certain components on a snowmobile that provides certain positions on the vehicle: "The steering device defines a steering position, the seat defines a seat position, and the footrests define a footrest position" (106 Patent at page 3). It then provides certain angles by comparing lines passing through these components: an angle referred to as "α" is formed from a line passing though the seat position and steering position and a line passing through the seat position and footrest position, an angle referred to as "β" is formed from a line passing though the footrest position and the steering position and a line passing through the footrest position and the seat position, and an angle referred to as "γ" is formed from a line passing through the footrest position and the steering position and a line passing through the steering position and the seat position. For each angle, the Patent describes a range of preferred sizes in degrees. The Patent also provides that the relationship for these angles satisfies $\alpha \geq \beta \geq \gamma$ and that it satisfies angle $\alpha \approx 2.5\gamma$.

[20] The Patent also describes that an angle (referred to as angle "ϕ") formed by comparing a line passing through the steering position and the seat position with the horizontal. The Patent provides preferred measurements for angle ϕ in degrees. The Patent also describes that the snowmobile has a steering shaft disposed over the vehicle's engine at an angle referred to as ε; preferred measurements for angle ε are provided by the Patent. The Patent further describes an angle referred to as μ, formed by comparing a line passing through the steering position and the

seat position with a line passing through the seat position and the top of the windshield. Preferred measurements for μ are provided in the Patent.

[21] The Patent teaches that the invention can feature a frame and a seat disposed on the frame, a windshield disposed forward of the steering device, a drive axle disposed on the frame, a steering device disposed on the frame, right and left footrests disposed below the seat. The Patent provides for a distance *b*, which is described as being between vertical lines passing through the steering device and the seat. The Patent describes preferred lengths for distance *b* in centimetres. It also provides for the snowmobile's footrests to be disposed at angle Δ, for which preferred angles are provided in degrees.

[22] The Patent describes 20 Figure drawings, which are included at the end of the Patent. They purport to illustrate both a conventional snowmobile as well as the snowmobile made according to the teachings of the Patent from side, top, and perspective views, calling out distances *a*, *x*, *y*, *z*, *b*, and angles λ, π, ω, θ, ϕ, Δ, μ, ε as well as the calculations of α_{min} and α_{max}, β_{min} and β_{max}, and γ_{min} and γ_{max}. It also provides two illustrations, Figures 19 and 20, which purport to show front and side views of the standard rider.

[23] The figures provide illustrations as to the difference between the conventional snowmobile and the new configuration obtained through the positioning of the standard rider. In particular, figure 3 seeks to compare the old with the new configuration in one illustration.

[24] The Patent describes preferred embodiments for the invention; however, it notes that the construction of these elements is "readily known to those skilled in the art" and, as such, it only provides a "description of those elements required for an understanding of the present invention" (106 Patent, page 7).

[25] The Patent provides particular directions on how the "average rider" is placed on a conventional snowmobile:

> When seated, the average rider 26 will be positioned so that his hands grasp steering device 32 at steering position 36. Moreover, rider 26 will be seated so that the center of his torso 42 is above seat position 30. When seated in this manner, the rider's feet 46 naturally will be placed at footrest position 38. Positioned in this manner, the rider's center of gravity 40 will be located just forward of the rider's stomach, offset from the center of the rider's torso 42. (The rider's center of gravity 40 is offset forwardly from the center of the rider's torso 42 because the rider's arm and legs are disposed forward of the rider's torso 42 when rider 26 is in the driving position.)
> (106 Patent, page 8)

The Patent indicates that the result of the rider being in this position on the conventional snowmobile is a "situation where rider 26 is seated in a relatively upright position toward the rear of the vehicle" (106 Patent, page 8).

[26] The Patent then provides directions on how the rider is to be placed on the invention snowmobile :

> When rider 126 is on snowmobile 110, the rider will be positioned on seat 128 so that he occupies seat position 130. Seat position 130 is the point at which the weight of the rider 126 is exerted on the seat 128 while seated in a biomechanically neutral position on the seat with its feet disposed on the footrest at the footrest position and its hands disposed on the steering device at the steering position, with

> the snowmobile being steered straight and headed straight on flat terrain and being in running condition.
> (106 Patent, page 9)

It notes that the person skilled in the art at whom the Patent is directed would understand that a biomechanically neutral position is "one wherein each of the opposing muscles of the major supporting muscle group that maintain the rider in his position are in equilibrium" (106 Patent, page 9). The Patent provides some guidance about the standard rider and how he is to be used to determine certain positions on the snowmobile:

> In cases of difficulty [determining the seating position], it may be determined by taking a 50-percentile United States human male (having a weight of 78 kilograms and dimensions show in FIGS. 19 and 20), placing him on the snowmobile in the biomechanically neutral position shown in the Figures (*i.e.*, that approximate the position of a rider a few seconds after starting the vehicle, heading straight ahead on flat terrain), and drawing a line from his shoulder through his hip. (For purposes of this discussion, a standard person is illustrated in FIGS. 19 and 20.) The intersection of that line with the seat may be considered to be the seat position 130.
> (106 Patent, pages 9-9a)

> As is the case with the seating position 130, the steering position 136 may vary depending on the size and shape of the hands of the rider 126. In cases of difficulty, the steering position 136 may be determined by placing the hands of the same 50-percentile rider described above, placing it on the steering device 132 in normal operating position. The steering position 136 will be the intersection of the center of the palm of the hands of the rider 126 and the steering device 132.
> (106 Patent, page 10)

[27] The Patent declares that the invention has a number of advantages, namely that the new rider position permits the rider to more easily raise himself to a standing position from the seat using primarily the strength of his legs rather than by pulling himself up using the handlebars and that placing the rider's centre of gravity closer to that of the vehicle helps to minimize the effect of

bumps and terrain on the rider. Further advantages are described, including that the windshield better protects the rider's head from temperature and noise by being within the laminar air flow region, the rider position provides him with an improved view of the ground in front of the snowmobile, the rider is less likely to hit his knees with the steering device, and there is an improved ride for additional riders who are also closer to the vehicle's centre of gravity.

[28] Prior to setting out the claims, the Patent indicates that while it makes reference to preferred embodiments of the invention, the person skilled in the art at whom the Patent is directed will understand that various changes and substitutions may be made without departing from the invention or its teachings.

(2) Claims

[29] The Patent then sets out 80 claims, eight of which are independent claims and the remainder depend on at least one other claim. As previously noted, only four claims remain directly asserted in this proceeding for the 106 Patent: 1, 7, 27, and 77.

(a) *Claim 1*

[30] Claim 1 reads as follows

> A snowmobile, comprising:
>
> a frame including a tunnel;
>
> an engine disposed on the frame;
>
> a drive track disposed below the tunnel and being operatively connected to the engine for propulsion of the snowmobile;

> a straddle seat disposed on the tunnel above the drive track and rearward of the engine, the seat being dimensioned to support a standard rider having dimensions and weight of a 50-percentile human male;
>
> two skis disposed on the frame;
>
> a steering device disposed on the frame forward of the seat, the steering device being operatively connected to the two skis for steering the snowmobile, the steering device having a steering position;
>
> a pair of footrests, one footrest being disposed below each side of the seat, each footrest being dimensioned and arranged with respect to the seat and the steering device to support one of the standard rider's feet thereon, the footrests having a footrest position;
>
> the snowmobile constructed and arranged such that, when the standard rider is in a standard position defined as the standard rider straddling and being seated in a biomechanically neutral position on the seat with its feet disposed on the footrests on the footrest position and its hands disposed on the steering device on the steering with the snowmobile being steered straight on flat terrain and being in running condition and full of fuel, the snowmobile has a first center of gravity without the standard rider and a second center of gravity with the standard rider and a distance between a vertical line passing through the first center of gravity and a vertical line passing through the second centre of gravity is between 0 cm and 14 cm inclusive.

(b) *Claim 7*

[31] Claim 7 depends on Claim 1 but specifies that the distance between the centres of gravity be between 2 and 12 cm.

(c) *Claim 27*

[32] Claim 27 is a dependent claim, referring to the snowmobiles described in the un-asserted Claims 20 through 25. The independent claim on which Claim 27 is based is Claim 20, which is

substantially similar to Claim 1 but with the following changes. Claim 20 adds an element to the snowmobile, namely "a forward-most drive track axle disposed on the frame." It also changes the final element of the snowmobile to require that the snowmobile be "steered straight and heading straight on flat terrain" (as opposed to Claim 1's requirement for "the snowmobile being steered straight on flat terrain"). Finally, Claim 20 does not speak to the centre of gravity of the snowmobile but focuses on the centre of gravity of the standard rider:

> … the standard rider has a center of gravity and a distance between a vertical line passing through the forward-most drive track axle and a vertical line passing through the center of gravity of the standard rider is between 15 cm and 65 cm inclusive.

[33] Claims 21 through 25 add the following element to the snowmobile described in Claim 20:

> … a longitudinal centerline and a seat position is defined on the seat with respect to the standard rider in the standard position, and the seat position is a point along the longitudinal centerline wherein a distance between a vertical line passing through the point and a vertical line passing through the steering position [is between 40 and 90 cm, between 50 and 80 cm, between 60 and 80 cm, exactly 65 cm, or exactly 70 cm].

[34] To the snowmobiles described in Claims 20 through 25, the asserted Claim 27 specifies that "the distance between the vertical line passing through the forward-most drive track axle and the vertical line passing through the center of gravity of the standard rider is between 35 cm and 55 cm inclusive."

(d) *Claim 77*

[35] The final asserted claim, Claim 77, is also a dependent claim, referring to the snowmobiles described in the un-asserted Claims 71 through 76. The independent claim on which Claim 77 is

based is Claim 71, which is also substantially similar to Claim 1 but with the following changes. Like Claim 27, the snowmobile must be "steered straight and heading straight on flat terrain." The centres of gravity at issue in Claim 71 are:

> … the snowmobile has a center of gravity with the standard rider and the standard rider has a center of gravity and a line passing through the center of gravity of the snowmobile with the standard rider and the center of gravity of the standard rider forms an angle with horizontal that is between 35° and 84° inclusive.

[36] Claims 72 through 76 add the same element to the snowmobile described in Claim 71 as do claims 21 to 25:

> … a longitudinal centerline and a seat position is defined on the seat with respect to the standard rider in the standard position, and the seat position is a point along the longitudinal centerline wherein a distance between a vertical line passing through the point and a vertical line passing through the steering position [is between 40 and 90 cm, between 50 and 80 cm, between 60 and 80 cm, exactly 65 cm, or exactly 70 cm].

[37] To the snowmobiles described in Claims 71 through 76, the asserted Claim 77 specifies that the angle be between 45° and 75°.

B. *The 813 Patent*

[38] The 813 Patent is a divisional of the application that became the 106 Patent; accordingly, it shares the filing date, publication date, and priority date information with the 106 Patent, including the agreement to use the American priority date. The Patent, also entitled "Snowmobile" ("Motoneige"), lists Bruno Girouard and Berthold Fecteau as inventors. The Patent was issued on March 27, 2007. Bombardier Recreational Products Inc. is the listed owner of the Patent.

(1) Disclosure

[39] The 813 Patent shares the same disclosure as provided in the 106 Patent, as set out above.

(2) Claims

[40] The Patent makes 75 claims, five of which are independent and the remainder depend on at least one other claim. Claims 37, 38, 48, and 73 remain directly asserted.

(a) *Claim 37*

[41] Claim 37 is a dependent claim, referring to Claims 1 through 27 and Claim 36. The independent claims Claim 37 relies on Claims 1, 9, 14, 19, and 27, all of which are the same except for a single element of the snowmobile described.

[42] Claim 1 reads as follows

> A snowmobile, comprising:
>
> a frame including a tunnel;
>
> an engine disposed on the frame;
>
> a drive track disposed below and supported by the tunnel and operatively connected to the engine for propulsion of the snowmobile;
>
> two skis disposed on the frame, each via a front suspension;
>
> a straddle seat disposed on the tunnel above the drive track and rearward of the engine, the seat being dimensioned to support a standard rider having the dimensions and weight of a 50-percentile human male;

> a pair of footrests supported by the frame to support the rider's feet, the footrests having a footrest position; and
>
> a steering device disposed on the frame forward of the seat, the steering device being operatively connected to the two skis for steering the snowmobile, the steering device having a steering position;
>
> the snowmobile constructed and arranged such that when the standard rider is in a standard position defined as the standard rider straddling and being seated in a biomechanically neutral position on the seat with its feet disposed on the footrests on the footrest position and its hands disposed on the steering device on the steering position with the snowmobile being steered straight and headed straight on flat terrain and being in running condition, a seat position is defined on the seat with respect to the standard rider, and
>
> a line passing through the seat position and the steering position forms angle α with a line passing through the seat position and the footrest position,
>
> a line passing through the footrest position and the steering position forms angle β with the line passing through the footrest position and the seat position,
>
> the line passing through the footrest position and the steering position forms angle γ with the line passing through the steering position and the seat position, and
>
> angle α is between 63° and 152°, angle β is between 16° and 84°, and angle γ is between 11° and 42°.

[43] Claims 2 through 8 depend on the snowmobile described in Claim 1. Claims 2 through 4 provide alternate ranges in degrees for angles α, β, and γ. Claim 5 requires a distance between vertical lines passing through the steering and seat positions to be between 40 and 90 cm. Claim 6 adds reference to a plurality of axles about which the drive track is disposed and requires that the steering position be forward of the forward-most axle. Claim 7 adds left and right sideboards and

provides that the footrests be the forward-most portions of the sideboards. Claim 8 further adds a pair of toeholds, positioned above the footrests.

[44] The independent Claim 9 is the same as Claim 1 except that angles α, β, and γ are not described with angles in degrees, but instead with a requirement that they satisfy the relationship $\alpha \geq \beta \geq \gamma$. Claims 10 through 13 depend on the snowmobile described in Claim 9 and provide the same requirements for the snowmobile as Claims 5 through 8 (distance of 40 to 90cm, plurality of axles with the steering position forward of the forward-most drive track axle, sideboards, and toeholds).

[45] The independent Claim 14 is the same as Claim 1 except that angles α, β, and γ are not described with angles in degrees, but instead with a requirement that $\alpha \approx \gamma$. Again, Claims 15 through 18 depend on the snowmobile described in Claim 9 and provide the same requirements for the snowmobile as Claims 5 through 8 (distance of 40 to 90cm, plurality of axles with the steering position forward of the forward-most drive track axle, sideboards, and toeholds).

[46] The independent Claim 19 is the same as Claim 1 except that angles α, β, and γ are not described. Rather the claim provides that "a line passing through the seat position and the steering position forms an angle ϕ with horizontal that is between 15° and 51°." Claims 20 through 22 provide alternate ranges in degrees for angle ϕ. Claims 23 through 26 provide the same requirements for the snowmobile as Claims 5 through 8 (distance of 40 to 90cm, plurality of axles with the steering position forward of the forward-most drive track axle, sideboards, and toeholds).

[47] The independent Claim 27 is the same as Claim 1 except that angles α, β, and γ are not described. Rather the claim provides that "a distance between vertical lines passing through the steering position and the seat position is between 40 and 90 cm."

[48] Claim 36 depends on Claims 8, 13, 18, and 26, which are the claims adding toeholds to the snowmobile. Claim 36 provides that the "toeholds are over the feet of the standard rider when the standard rider is in the standard position."

[49] As previously stated, the asserted Claim 37 relies on any of Claims 1 through 27 and 36 with additional requirements that "the snowmobile is full of fuel, the snowmobile has a first center of gravity without the standard rider and a second center of gravity with the standard rider and a distance between a vertical line passing through the first center of gravity and a vertical line passing through the second center of gravity is between 0 cm and 14 cm inclusive."

(b) *Claim 38*

[50] The asserted Claim 38 relies on Claim 37 and, as such, relies on any of Claims 1 through 27 and 36. It requires the distance between the centres of gravity of the snowmobile with and without the standard rider to be between 2 and 12 cm.

(c) *Claim 48*

[51] The asserted Claim 48 relies on Claim 46. Claim 46 relies on any of Claims 1 through 27 and 36 with the addition of a forward-most drive track axle disposed on the frame and a

requirement that a vertical line passing through that axle and a vertical line passing through the centre of gravity of a standard rider have a distance between them of between 15 and 65 cm.

[52] Claim 48 narrows the distance between the vertical lines passing through the forward-most drive track axle and the standard rider's centre of gravity to between 25 and 55 cm.

(d) *Claim 73*

[53] The asserted Claim 73 relies on Claim 72. Claim 72 relies on any of claims 1 through 27 and 36 with the addition of requirements that the snowmobile be full of fuel and that "a line passing through the center of gravity of the snowmobile with the standard rider and the center of gravity of the standard rider forms an angle with horizontal that is between 35° and 84° inclusive."

[54] Claim 73 narrows the angle formed by the line passing through the centres of gravity of the snowmobile and the standard rider with horizontal to between 45° and 75°.

C. *The 964 Patent*

[55] The 964 Patent is entitled "Snowmobile with Active Rider Positioning" ("Motoneige à positionnement actif du conducteur"). The patent application was filed on November 15, 2002, and laid open for publication on November 11, 2003. It does not claim priority from any other application. Berthold Fecteau, Peter Watson, and Bruno Girouard are the listed inventors. The 964 Patent was issued on July 26, 2005. Bombardier Recreational Products Inc. is the listed owner of the Patent.

[56] The 964 Patent has 49 claims, of which 16 remain asserted: 1, 4, 6, 8, 13, 15, 16, 20, 24, 26, 27, 35, 37, 40, 42, and 48. The Patent includes 7 figures that seek to illustrate the difference between the invention and the prior art, as well as providing the measurements of the standard rider used to configure the new snowmobile.

(1) Disclosure

[57] The invention in the 964 Patent, as with the other two Patents, is said to concern the overall design and construction of a snowmobile and more particularly the construction and arrangement of various components that determine the position of a rider on the snowmobile. This Patent will use the relative positioning of the knees, ankles and hips of a standard rider. Thus, when seated and holding the steering device as positioned by the new configuration, the knees will be in front of the ankles but below the hips. The Patent provides that such positioning will facilitate absorbing bumps and allows the rider to actively position on the snowmobile. When compared to the prior art, the ankles are presented as being in line with the knees and for the knees to be higher than the hips.

[58] The Patent states that all dimensions are based on a standard rider which is defined as a "50th-percentile United States human male who weighs 78 kilograms (174.8 lb.) and has the dimensions illustrated in FIGS. 6 and 7." The Patent indicates that it would be obvious to a person of ordinary skill in the art that Figures 6 and 7 show dimensions "in centimeters with the middle value representing the 50th-percentile U.S. human male." There is said to be a "standard position" for the standard rider, in which "the rider is seated on the seat, is holding the steering device with his hands, and has his feet on the footrest." This standard position is said to be shown in the

Figures accompanying the Patent and represent a position taken "a few seconds after starting the vehicle, heading straight ahead on a flat terrain" (964 Patent, page 1).

[59] The Patent describes snowmobile components which may be present in one or more embodiments of the invention:

> a frame that includes a tunnel, an engine disposed on the frame, a drive track disposed below and supported by the tunnel and connected operatively to the engine for propulsion of the snowmobile, and two skis disposed on the frame. A straddle seat is disposed on the frame. The seat is dimensioned to support a standard rider in a standard position, the standard rider having the dimensions and weight of a 50th-percentile human male. A footrest is supported by the frame to support the rider's feet. A steering device is disposed on the frame. The steering device is operatively connected to the two skis for steering the snowmobile. The footrest, straddle seat, and steering device are constructed and arranged such that when the standard rider is in the standard position, the hips are disposed above the knees.
> (964 Patent, page 2)

[60] When the snowmobile is constructed according to certain embodiments, the Patent teaches preferred distances and relationships for points on the snowmobile and on the standard rider's body when the rider is in the standard position. The Patent prefers embodiments where the hips are disposed above the knees, the hips are disposed behind the ankles, the hips are behind the steering device and the ankles are disposed behind the knees. But the Patent is also concerned with the positioning of the knees, hips and ankles relative to the steering position: the hips are behind the steering device, the knees are disposed below the steering position, the ankles are disposed behind the steering position and the hips are disposed below the steering position. Furthermore, some measurements are taken relative to the footrest: the steering position is disposed in front of the forward-most portion of the footrest and the footrest position is disposed below the ankle. Finally,

the seat position is disposed below the hips and the knee position is disposed in the same area as the knee at a narrowed portion of the seat. For these relationships, the Patent provides some preferred distances in centimetres. It indicates that the relative positions of the steering, footrest, seat, and knee positions can be determined by reference to the relative positions of the steering position and the standard rider's hips, knees, and ankles.

[61] The 7 Figure drawings illustrate a conventional snowmobile from a side view (said to be a model year 1999 Ski-Doo MXZ), the purported invention snowmobile from side and top views, the rider position from a side view, and a perspective view of the frame, calling out various components and positions. The Patent also provides two illustrations, Figures 6 and 7, which purport to show front and side views of the standard rider with measurements of various parts of that standard rider.

[62] The Patent provides particular directions on how the average rider is placed on a conventional snowmobile. These directions are the same as those provided in the 106 and 813 Patents, as set out above (except that the final sentence of the description is no longer enclosed in parentheses). The result of this position is again the same as described previously, namely a "situation where rider 26 is seated in a relatively upright position toward the rear of the vehicle 10." The Patent notes that a rider may move out of this position, but this position is used "during normal relaxed riding" (964 Patent, pages 6-7)

[63] The Patent provides particular directions on how the rider is placed on the snowmobile as there is a new configuration of the snowmobile (which are similar, but not identical, to those directions provided in the 106 and 813 Patents) :

> When rider 126 is on snowmobile 110, the rider will be positioned on seat 128 so that he occupies seat position 130. Seat position 130 is the point at which the weight of the rider 126 is exerted on the seat 128, and is generally disposed 9 cm below the hips 131 of the rider 126. It will also be understood that seat 128 will be covered with an amount of foam or similar padding-type material, and that the amount of that foam will vary from seat to seat. When the rider 126 sits upon the seat 128, his weight will cause the foam to compress and he will sink into the seat 128. Preferably, the seating position 130 and hip 131 location is determined after this compression has occurred.
> (964 Patent, page 8)

[64] The Patent provides further guidance for locating positions on the purported invention (again, this guidance is similar, but not identical to that provided in the 106 and 813 Patents):

> Steering device 132 is positioned at the forward end of snowmobile 110 and above engine 115. As is the case with the seating position 130, the steering position 136 may vary depending on the size and shape of the hands of the rider 126. In cases of difficulty, the steering position 136 may be determined by placing the hands of the standard rider described above on the steering device 132 in the standard position. The steering position 136 will be the intersection of the center of the palm of the hands of the rider 126 and the steering device 132.
> (964 Patent, page 8)

> … The rider's feet 146 rest on footrests 134 in footrest position 138 just behind the center of gravity 144 of the vehicle 110. The footrest position 138 is in the location of the arch of the foot of the rider 126 when his feet are placed in the standard position on the vehicle. Under normal operating conditions, the rider's feet 146 will rest on a forward portion of the sideboards/footrests 134. This foot positioning places the rider's ankles 139, which are defined by the ankle joint, 9 cm above the footrest position 138.
> (964 Patent, page 9)

> The rider's ankle 139 and hip 131 positions determine the position of the rider's knees 141, which are defined by the knee joints. …
> (964 Patent, page 9)
>
> As illustrated in FIG. 4, the rider's knees 141 fit into a knee position 142 on the snowmobile 110. The knee position 142 is defined by a narrowed forward portion of the seat 128 that is designed to accommodate the rider's knees 131. As illustrated in FIG. 2, the knee position 142 is preferably disposed at the same vertical and longitudinal position on the snowmobile 110 as the rider's knees 141. The open space formed at the knee position 142 enables the rider 126 to actively position himself and more easily lean into turns because the knee position 142 allows the rider's outside knee 141 to move farther into the turn.
> (964 Patent, pages 9-10)

[65] The 964 Patent declares the purported invention to have several advantages, primarily that the rider can more easily raise himself from the seat using the strength of only his legs than on a conventional snowmobile. As such, the Patent states that the rider can maintain greater control over the snowmobile, experience less stress on the rider's back, and achieve a more comfortable ride. The Patent is also said to improve on the conventional snowmobile by the fact that the rider's centre of gravity is closer to the centre of gravity of the snowmobile. It calls out certain distances which can be measured relating to the centres of gravity: a distance between a vertical line passing through the vehicle's centre of gravity and a vertical line passing through the rider's centre of gravity (referred to as distance "*x*"), a distance between a vertical line passing through the forward-most drive track axle and a vertical line passing through the rider's centre of gravity (referred to as distance "z"). Other advantages described by the Patent include that the windshield better protects the rider's head from temperature and noise by being within the laminar air flow region, the rider position provides an improved view of the ground in front of the snowmobile, the rider is less likely to hit his knees with the steering device, and there is an improved ride for additional riders who are also closer to the vehicle's centre of gravity.

[66] Finally, the Patent indicates that, while it refers to preferred embodiments of the invention, persons skilled in the art will understand that various changes and substitutions may be made without departing from the invention or its teachings.

(2) Claims

[67] The 964 Patent then sets out 49 claims, three of which are independent claims and the remainder depend on at least one other claim. As previously noted, 16 claims remain directly asserted in this proceeding: 1, 4, 6, 8, 13, 15, 16, 20, 24, 26, 27, 35, 37, 40, 42, and 48.

(a) *Claim 1*

[68] Claim 1 reads as follows

> A snowmobile, comprising:
>
> a frame that includes a tunnel;
>
> an engine disposed on the frame;
>
> a drive track disposed below and supported by the tunnel and connected operatively to the engine for propulsion of the snowmobile;
>
> two skis disposed on the frame;
>
> a steering device disposed on the frame, the steering device being operatively connected to the two skis for steering the snowmobile, the steering device having a steering position;
>
> a straddle seat disposed on the tunnel above the drive track and rearward of the engine, the seat being dimensioned to support a standard rider having the dimensions and weight of a 50-perentile human male, the seat having a seating position;
>
> a pair of footrests supported by the frame to support the rider's feet, the footrests having a footrest position; and

> the snowmobile constructed and arranged such that, when the standard rider is in a standard position defined as the standard rider straddling and being seated on the seat on the seating position with its feet disposed on the footrests on the footrest position and its hands disposed on the steering device on the steering position with the snowmobile being steered straight and heading straight on flat terrain and being in running condition and full of fuel, the hips of the standard rider are disposed above its knees.

(b) *Claim 4*

[69] Claim 4 depends on Claim 1, 2, and 3. The un-asserted Claims 2 and 3 specify horizontal distances for the rider's hips to be disposed behind the steering position. Claim 4 further requires that the standard rider's hips are disposed above its knees by a vertical distance of between 0 and 20 cm when the rider is in the standard position.

(c) *Claim 6*

[70] Claim 6 depends on Claims 1 through 5, but further requires the standard rider's hips to be disposed behind its ankles by a horizontal distance of between 5 and 40 cm when the rider is in the standard position.

(d) *Claim 8*

[71] Claim 8 is an independent claim. It is identical to Claim 1 except that it does not speak to the hips of the standard rider being disposed above its knees. Instead, Claim 8 requires that "the ankles of the standard rider are disposed behind its knees."

(e) *Claim 13*

[72] Claim 13 depends on any of Claims 8, 9 and 10. The un-asserted Claims 9 and 10 specify horizontal distances for the rider's ankles to be disposed behind its knees. Claim 13 further requires the standard rider's knees to be disposed below the steering position by a vertical distance of at least 25 cm when the rider is in the standard position.

(f) *Claim 15*

[73] Claim 15 depends on any of Claims 8 through 12. The un-asserted Claims 11 and 12 provide alternate minimum vertical distances for the standard rider's knees to be disposed below the steering position than that in Claim 13. Claim 15 further requires the standard rider's ankles to be disposed behind the steering position by a horizontal distance of between 5 and 50 cm when the rider is in the standard position.

(g) *Claim 16*

[74] Claim 16 depends on any of Claims 8 through 12. It further requires the standard rider's ankles to be disposed behind the steering position by a horizontal distance of at least 15 cm when the rider is in the standard position.

(h) *Claim 20*

[75] Claim 20 is an independent claim. It describes a snowmobile which is identical to that claimed in Claim 1 for the first six listed elements; however, it describes the footrests of the

described snowmobile differently: “a pair of footrests supported by the frame to support the rider’s feet, the steering position being disposed forwardly of a forward most portion of the seat.” There is no eighth element to the snowmobile of Claim 20 (unlike in the other independent claims, Claim 1 and Claim 8).

(i) *Claim 24*

[76] Claim 24 depends on any of Claims 1 to 7. The un-asserted Claim 7 provides an alternate maximum horizontal distance for the standard rider’s hips to be disposed behind its ankles than that in Claim 6. Claim 24 further requires that rider’s knees to be disposed below the steering position by a vertical distance of at least 25 cm when the rider is in the standard position.

(j) *Claim 26*

[77] Claim 26 depends on any of Claims 1 to 7 and 22 to 24. The un-asserted Claims 22 and 23 provide an alternate minimum vertical distance for the standard rider’s knees to be disposed below the steering position than that in Claim 24. Claim 26 further requires the standard rider’s ankles to be disposed behind the steering position by a horizontal distance of between 5 and 50cm when the rider is in the standard position.

(k) *Claim 27*

[78] Claim 27 depends on any of Claims 1 to 7 and 22 to 24. It further requires the standard rider’s ankles to be disposed behind the steering position by at least 15 cm.

(l) *Claim 35*

[79] Claim 35 depends on any of Claims 1 to 7 and 22 to 34. The un-asserted Claim 28 provides an alternate minimum distance for the standard rider's ankles to be disposed behind the steering position than that in Claim 27. The un-asserted Claims 29 and 30 provide vertical distances for the standard rider's hips to be disposed below the steering position when the rider is in a standard position. The un-asserted Claims 31 and 32 provide vertical distances for the standard rider's knees to be disposed above its ankle when the rider is in the standard position. The un-asserted Claims 33 and 34 provide horizontal distances for the standard rider's knees to be disposed behind the steering position when the rider is in the standard position.

[80] Claim 35 requires the steering position to be disposed forwardly of a forward-most portion of the footrest.

(m) *Claim 37*

[81] Claim 37 depends on any of Claims 1 to 7 and 8 to 19. The un-asserted Claim 14 requires the standard rider's ankles to be disposed behind the steering position when the rider is in the standard position. The un-asserted Claim 17 relies on any of Claims 8 to 12 and requires the standard rider's ankles to be disposed behind the steering position by at least 25 cm. The un-asserted Claims 18 and 19 relies on any of Claims 8 to 17 and provide vertical distances for the standard rider's hips to be disposed below the steering position when the rider is in the standard position.

[82] Claim 37 requires the hips of the standard rider to be disposed above its knees when the rider is in the standard position.

(n) *Claim 40*

[83] Claim 40 relies on any of Claims 8 to 19 and 37 to 39. The un-asserted Claims 38 and 39 provide horizontal distances for the standard rider's hips to be disposed behind the steering position when the rider is in the standard position. Claim 40 requires the standard rider's hips to be disposed above its knees by a vertical distance of between 0 and 20 cm when the rider is in the standard position.

(o) *Claim 42*

[84] Claim 42 relies on any of Claims 8 to 18 and 37 to 41. The un-asserted Claim 41 provides an alternate vertical distance for the standard rider's hips to be disposed above its knees when in the standard position than that in Claim 40. Claim 42 requires the standard rider's hips to be disposed behind its ankles by a horizontal distance of between 5 and 40 cm when the rider is in a standard position.

(p) *Claim 48*

[85] Claim 48 relies on any of Claims 8 to 19 and 37 to 47. The un-asserted Claim 43 provides an alternate horizontal distance for the standard rider's hips to be disposed behind its ankles than that in Claim 42. The un-asserted Claims 44 and 45 provide vertical distances for the standard rider's knees to be disposed above its ankles when the rider is in the standard position. The un-

asserted Claims 46 and 47 provide horizontal distances for the standard rider's knees to be disposed behind the steering position when the rider is in the standard position.

[86] Claim 48 requires the steering position to be disposed forwardly of a forward-most portion of the footrest.

[87] I note that, although the independent claims of the three Patents speak a snowmobile constructed and arranged to fit measurements and angles, there is no instruction to be found in any of the Patents as to how the construction of the snowmobile is to be altered. Similarly, no indication is provided as to how the various components are to be reorganized.

D. *The 264 Patent*

[88] The 264 Patent is of a different ilk than the other 3 Patents. Nevertheless, the Patent states that the construction of a snowmobile according to the alleged invention permits the forward position. It is entitled "Frame Construction for a Vehicle" ("Cadre support pour véhicule"). The application for the Patent was filed on June 12, 2001, and claims a priority date of October 4, 2000, from a United States patent application (60/237,384). The Patent has a publication date of April 4, 2002, and it was issued on February 14, 2006. The Patent lists four inventors: Berthold Fecteau, Jerome Wubbolts, Anne-Marie Dion, and Bruno Girouard. The Patent's listed owner is Bombardier Recreational Products Inc.

[89] The 264 Patent makes 43 claims, of which 25 are asserted: 1 to 3, 5 to 10, 12 to 18, 20 to 26, 41, and 43.

(1) Disclosure

[90] The invention contained in the Patent is said to relate to the following:

> The present invention relates to the construction of vehicles such as snowmobiles, all terrain vehicles ("ATVs"), and other similar vehicles. More specifically, the present invention concerns the construction of a frame and related structural elements that enhance the ruggedness and ability of such vehicles to operate across a wide variety of different terrains and under a wide variety of conditions. In addition, the present invention concerns the design and construction of a frame for snowmobiles, ATVs, and related vehicles that facilitate the construction of such vehicles with an improved rider positioning.
> (264 Patent, page 1)

This Patent is concerned with the actual construction of the vehicle, its structural elements.

[91] The Patent describes the differences in designs for snowmobiles, ATVs and related vehicles. It notes that they experience different stresses and strains on their frames and suspensions, are of different shape and size, and have different centers of gravity. Despite these differences, the Patent states that it has recently been recognized that recreational vehicles may incorporate many structural elements that are the same using similar design approaches.

[92] The object of the purported invention contained in the 264 Patent is to provide a series of frame assemblies. The first is described as a frame assembly with a tunnel, an engine cradle disposed forward of the tunnel and connected to the tunnel, and a sub-frame disposed forward of the engine cradle and connected to the engine cradle (para 0011). This assembly is said to further include a forward support assembly extending upwardly from the sub-frame, an upper column extending upwardly from the engine cradle to connect with the forward support assembly, and a

rear brace assembly extending upwardly from the tunnel to connect with the forward support assembly and the upper column.

[93] A second frame assembly is presented where the forward support assembly, the upper column, and the rear brace assembly connect at an apex above the upper column. A third frame assembly is described as a frame assembly where the forward support assembly and rear brace assembly form a pyramidal construction. A fourth frame assembly further includes a steering bracket connected at the apex to support a steering shaft which may include the ability to position the steering shaft in more than one position. A fifth frame assembly is described to include an engine disposed in the engine cradle, an endless track operatively connected to the engine and disposed beneath the tunnel, and a pair of skis operatively connected for steering. A sixth frame assembly is described with an engine disposed in the engine cradle, a rear wheel operatively connective to the engine and disposed beneath the tunnel for propulsion, and two front wheels operatively connected for steering.

[94] A seventh frame assembly is presented that includes a tunnel and an engine cradle. It also has a rear brace assembly attached to the tunnel between its front and rear ends which extends upwardly from the tunnel. The assembly also includes a forward support assembly attached to the rear brace assembly which extends forwardly and downwardly from the rear brace assembly. The Patent also describes a variation of this assembly where the rear brace and forward support assemblies have left and right legs. The legs are said to connect to one another at an apex to form a pyramidal structure above the tunnel and engine cradle.

[95] The Patent describes 35 Figure drawings. They illustrate exterior views of a prior art snowmobile and a snowmobile said to incorporate the invention, as well as an overlay to demonstrate a difference in rider positioning. A prior art frame assembly is shown that is described as a 2000 model year Ski-Doo Mach Z. Multiple figures present embodiments of the invention frame assemblies from different perspectives, including figures that call out components of the assemblies and their relative positioning within the assemblies and to other components of the vehicles. Figures show the invention incorporated into snowmobiles as well as into wheeled vehicles. The final figure consists of a graph that is said to compare the vertical displacement rate of the invention with prior art snowmobile frames from Bombardier and Arctic Cat.

[96] The 264 Patent describes the prior art construction of a frame assembly, with particular reference to Figure 4. The major components of the prior art assembly in a snowmobile are a tunnel and an engine cradle, with the cradle positioned in front of the tunnel to receive the motor. The Patent states that in order to provide an improved rider position with the rider closer to the centre of gravity of the snowmobile, the handlebars needed to move forward. Moving the handlebars forward in turn required a redesign of the vehicle's frame assembly, resulting in the described invention. The invention frame assembly is now said to include the tunnel, engine cradle, and over-arching frame elements, as shown in Figure 5.

[97] Contrary to the other three Patents-in-suit, the Patent provides guidance on how the frame assemblies are to be constructed in different embodiments of the invention:

> Figure 6 illustrates the individual elements of rear frame assembly 84 in greater detail. Rear frame assembly 84 includes an upper column 118, which is an inverted U-shaped structural element. If necessary, upper column 118 may be reinforced with a cross-

> member 120, but this is not needed to practice the present invention. A left brace 122 and a right brace 124 are connected to a bracket 126 above upper column 118. A bushing or bearing (or other similar element) 128 is attached to bracket 126 and accepts steering shaft 114 therethrough. It also secures steering shaft 114 to rear frame assembly 84. Left and right braces 122, 124 include left and right brackets 130, 132 at their lower portions. Left and right brackets 130, 132 secure left and right braces 122, 124 to tunnel 86 of snowmobile 22.
> (264 Patent, pages 14-15)
>
> Figure 7 illustrates a forward support assembly 134 (also called front triangle 134), which connects to bracket 126 and extends forwardly of bracket 126. Forward support assembly 134 includes a bracket 136 at its rear end that connects to bracket 126 of frame assembly 84 (preferably bolted). Forward support assembly 134 also has left and right braces 138, 140 that extend forwardly and downwardly from bracket 136 and are connected thereto preferably by welding. Left and right braces 138, 140 are connected at their forward ends by a cross-member 142, which includes a plurality of holes 144 therein to lighten the weight thereof. Left and right connecting brackets 145, 146 are connected to cross-member 142. The left and right connecting brackets 145, 146 connect, in turn, to front suspension 110.
> (264 Patent, pages 15-16)
>
> Figures 13 and 14 illustrate a combination of a variation of frame assembly 190 connected to tunnel 86. Frame assembly 190 includes upper column 118 as illustrated in Figures 8-10. However, frame assembly 190 differs somewhat from frame assembly 84. For example, left and right braces 194, 196 are shaped so that they extend outwardly from the positions defined by left and right braces 122, 124. As illustrated, left and right braces 194, 196 include elbows 198, 200. A cross-brace 202 optionally may be placed between left and right braces 194, 196 to add structural rigidity to frame assembly 190. As with frame assembly 84, a bracket 126 is provided at apex 204 where left and right braces 194, 196 meet one another. Forward support assembly 134 is the same as depicted in Figure 7. A front engine cradle wall is also show in Figure 13.
> (264 Patent, pages 17-18)

[98] The Patent indicates that the person skilled in the art would understand that these two frame embodiments are “interchangeable” and may be further altered based on the requirements of

the particular vehicle design (264 Patent, page 21). It also states that embodiments of the invention relating to wheeled vehicles "[f]or the most part […] are the same as those for snowmobile 22, except for those elements required to attach wheel 334 to vehicle 332" (264 Patent, page 22). Figures 26 and 27 depict frame assembly 191 where the invention has been incorporated into wheeled vehicles.

[99] The 264 Patent presents the results that are achieved through the use of the embodiments of the invention:

> Frame assembly 84, 190, 191 of the present invention uniquely distributes the weight loaded onto the vehicle, whether it is snowmobile 22 or one of wheeled vehicles 332, 356. Each of the main components of the frame assembly 84, 190, 191 forms a triangular or pyramidal configuration. All of the bars of the frame assembly 84, 190, 191 work only in tension and compression, without bending. Therefore, each bar of frame assembly 84, 190, 191 intersects at a common point, the bracket 126 (in the non-variable steering geometry) or variable geometry steering bracket 374. With this pyramidal shape, the present invention creates a very stable geometry.
> (264 Patent, pages 25-26)

[100] The Patent states that the use of the frame assembly enhances the torsional and structural rigidity of the vehicle as well as reducing its bending moment from front to rear. These improvements are said to improve the vehicle's handling. The use of the frame assembly and resulting increased rigidity are also said to advantage the vehicle in that the frame can be made lighter and stronger than prior art frame assemblies.

[101] Similar to the 106, 813, and 964 Patents, the 264 Patent indicates that the use of example embodiments should not be understood as limiting the invention and that changes may be made

without departing from the scope and spirit of the invention within the purview of the claims following.

(2) Claims

[102] The 264 Patent has 43 claims, three of which are independent claims and the remainder depend on at least one other claim. As previously noted, 25 claims remain asserted in this proceeding: 1 to 3, 5 to 10, 12 to 18, 20 to 26, 41, and 43.

(a) *Claim 1*

[103] Claim 1 reads as follows

> A snowmobile, comprising:
>
> a frame including a tunnel and an engine cradle forward of the tunnel;
>
> an engine mounted in the engine cradle;
>
> a drive track disposed below and supported by the tunnel and connected operatively to the engine for propulsion of the snowmobile;
>
> left and right skis disposed on the frame;
>
> a straddle seat disposed on the tunnel above the drive track and rearward of the engine;
>
> a pair of footrests supported by the frame;
>
> a steering column movably connected to the frame without a headpipe and operatively connected to the two skis;
>
> a handlebar connected to the steering column;
>
> a pyramidal brace assembly connected to the frame, the assembly including:

> left and right rear legs extending forwardly and upwardly from the tunnel, each of the left and right rear legs having a front end and a rear end, the rear ends of the rear legs being spaced further from each other than the front ends of the rear legs, and left and right front legs extending rearwardly and upwardly from the frame forward of the tunnel, each of the left and right front legs having a front end and rear end, the front ends of the front legs being spaced further from each other than the rear ends of the front legs.

(b) *Claim 2*

[104] Claim 2 depends on Claim 1, but further requires a cross-member interconnecting the front legs of the pyramidal brace assembly.

(c) *Claim 3*

[105] Claim 3 depends on Claim 1, but further requires the legs of the pyramidal brace assembly to form an apex not forward of the engine.

(d) *Claim 5*

[106] Claim 5 depends on Claim 1, but further requires the rear ends of the front legs and front ends of the rear legs of the pyramidal brace assembly to be interconnected.

(e) *Claim 6*

[107] Claim 6 depends on Claim 1, but further requires the rear ends of the front legs and front ends of the rear legs of the pyramidal brace assembly to be interconnected and to form an apex not forward of the engine.

(f) *Claim 7*

[108] Claim 7 depends on Claim 6, but further requires an upper column extending upwardly from the frame.

(g) *Claim 8*

[109] Claim 8 depends on Claim 7, but further requires the upper column to form the apex with the front ends of the rear legs and the rear ends of the front legs of the pyramidal brace assembly.

(h) *Claims 9 to 10 and 12 to 15*

[110] Claims 9, 10, 12, 13, 14, and 15 depend on Claims 2, 3, 5, 6, 7 and 8, respectively. Each claim requires a sub-frame, left and right suspension arms, and left and right skis. Each claim provides that the sub-frame is located forward of the engine cradle and specifies that the suspension arms be pivotally connected to the sides of the sub-frame. Each ski is disposed on the frame via a connection to a suspension arm.

(i) *Claim 16*

[111] Claim 16 is an independent claim. It is identical to Claim 1 except for the following changes. Claim 16 additionally requires a sub-frame forward of the engine cradle and left and right suspension arms pivotally connected to the sides of the sub-frame. While Claim 1 speaks of the skis as disposed on the frame, Claim 16 requires them to be connected to the left and right

suspension arms. Claim 16 also differs from Claim 1 in that it does not require the absence of a headpipe.

(j) *Claim 17*

[112] Claim 17 depends on Claim 16, but further requires a cross-member interconnecting the front legs of the pyramidal brace assembly. This is the same addition to the snowmobile as provided by Claim 2.

(k) *Claim 18*

[113] Claim 18 depends on Claim 16, but further requires the legs of the pyramidal brace assembly to form an apex not forward of the engine. This is the same addition to the snowmobile as provided by Claim 3.

(l) *Claim 20*

[114] Claim 20 depends on Claim 16, but further requires the rear ends of the front legs and front ends of the rear legs of the pyramidal brace assembly to be interconnected. This is the same addition to the snowmobile as provided by Claim 5.

(m) *Claim 21*

[115] Claim 21 depends on Claim 16, but further requires the rear ends of the front legs and front ends of the rear legs of the pyramidal brace assembly to be interconnected and to form an apex not forward of the engine. This is the same addition to the snowmobile as provided by Claim 6.

(n) *Claim 22*

[116] Claim 22 depends on Claim 21, but further requires an upper column extending upwardly from the frame. This is the same addition to the snowmobile as provided by Claim 7.

(o) *Claim 23*

[117] Claim 23 depends on Claim 22, but further requires the upper column to form the apex with the front ends of the rear legs and the rear ends of the front legs of the pyramidal brace assembly. This is the same addition to the snowmobile as provided in Claim 8.

(p) *Claim 24*

[118] Claim 24 is an independent claim. It is identical to Claim 1 except for the following changes. It does not require the absence of a headpipe and there is no pyramidal brace assembly described. Instead, Claim 24 calls for a rear brace assembly which includes “left and right rear legs extending forwardly and upwardly from the tunnel, each of the left and right rear legs having a front end and a rear end, the rear ends of the rear legs being spaced further from each other than the front ends of the rear legs” (264 Patent, page 33).

(q) *Claim 25*

[119] Claim 25 depends on Claim 24, but further requires a front support assembly which includes "left and right front legs extending rearwardly and upwardly from the frame forward of the tunnel, each of the left and right front legs having a front end and a rear end, the front legs being spaced further from each other than the rear ends of the front legs" (264 Patent, page 33).

(r) *Claim 26*

[120] Claim 26 depends on Claim 25, but further requires the front support assembly and rear brace assembly to form a pyramidal structure.

(s) *Claim 41*

[121] Claim 41 depends on Claim 26, but further requires a cross-member interconnecting the legs of the front support assembly.

(t) *Claim 43*

[122] Claim 43 depends on Claim 26, but further requires the steering column to extend through a V-shaped structure formed by the legs of the front support assembly.

III. The Evidence / Witnesses

[123] The parties in this case presented the evidence of a number of lay witnesses. The Plaintiff produced 10 witnesses, together with 4 expert witnesses. Moreover, two more expert witnesses testified on remedies as the trial was not bifurcated. The Defendants had 5 witnesses, together with 4 experts on infringement and validity of the Patents, and 2 experts on damages. A summary of the evidence of witnesses will assist in understanding the issues raised. I will refer to the evidence of the experts in due course when reviewing issues on which they offered expert evidence.

A. *BRP's witnesses*

(1) Jean-Yves LeBlanc

[124] Mr. Leblanc retired from BRP in January 2012 and currently works as a consultant retained to provide expertise following disasters. He graduated with a Bachelor's degree in Applied Science and Mechanical Engineering from the École polytechnique de l'Université de Montréal in 1973. He is a member of the Ordre des ingénieurs du Québec. He joined the Recreational Products Division in 1992 and he retired in 2012.

[125] Mr. Leblanc testified about how snowmobile development was organized in Bombardier when he was director of engineering. He first encountered the project that became the REV (Radical Evolution Vehicle) in the winter of 1997 when he visited the Advanced Concept Group workshop and saw the "buck mockup" in the corner of the workshop, which did not appear to him to be an official project. Mr. Leblanc testified that the rider position used by the REV was different

than the traditional snowmobile position (which he described as being spread out, having footrests running towards the front of the machine at an angle, and having the handlebar, seat, and feet positions similar to sitting back in a chair; he demonstrated this position in court). Mr. Leblanc testified that he had reservations about the REV position (the willingness of the market to accept a new position, the holding of the legs in a bent position for long periods of time could be tiring, the amount of mass needing to be supported by the skis, the reduction of polar resistance could lead to loss of control of the machine and 'louvoiement'). Mr. Leblanc also testified about the changes to the frame of the REV to help rigidify the structure by using a pyramidal structure; forces received by the front skis are transmitted through the 'membrures' comprising the pyramid and to the rear, other side of the snowmobile ("ski avant droit monte sur une bosse, le châssis subit une impulsion verticale qui est transmise à travers cette membrure qui monte vers le centre et la force redescend sur la membrure arrière du côté opposé" [TRANSLATION] "when the ski -- the front ski, right ski goes over a bump, the frame gets a vertical impulsion which is transmitted through this strut going towards the centre and the force goes down towards the strut on the other side.")

[126] In March or April of 1999, a two-day Product Orientation Committee [POC] of BRP was held to assess the REV prototypes from the Advanced Concept Group: a first day of meetings in Valcourt and then testing on paths at a BRP centre in Cabano in the Témiscouata region of Quebec. The POC decided to go ahead with the REV project and a mandate was given to Mr. Leblanc and the engineering department to take the project to production on a limited basis using soft-tooling (estimate of 25,000 over 3 years and limited to the snowcross/performance/sport market).

(2) José Boisjoli

[127] Mr. Boisjoli is the president and CEO of BRP. He graduated from l'Université de Sherbrooke in 1981 with a degree in Mechanical Engineering. In 1989, he joined Bombardier Inc. When BRP became independent of Bombardier Inc. in 2003, he was appointed President and CEO of BRP. BRP sells 6 product ranges in 105 countries. It employs 7,100 people in 26 countries (with about 3,000 in Valcourt). Since May 2013, the company has been a public company.

[128] Mr. Boisjoli became aware of the REV at a POC meeting in the summer of 1997 when he saw the shape of a new snowmobile could take in the form of the "Buck". It is only in April or May 1998 that a functional vehicle was ready for trials. The test had to be conducted in the Chibougamau region of Quebec where there was still some snow. A second prototype was tested in January or February 1999. The changed seating position and the pyramidal structure were validated; the decision was made to develop the REV.

[129] Mr. Boisjoli testified about 4 problems that needed to be resolved in the development stage (protection against the wind, 'louvoiement', poorer performance in deep snow, and higher manufacturing costs compared to the traditional snowmobile). In the spring 2000, the company had gained enough confidence with the REV and the ability to make it work for all segments that they decided to go with hard tooling which allows for more units to be manufactured.

[130] By winter 2000-2001, they were 2 years from fully launching the product and work began on how to introduce the product to the clients. Mr. Boisjoli testified that riders needed a period of

adaptation to get used to the REV riding position and they invited 3 dealers, who had signed confidentiality agreements, to try the prototype.

[131] The new configuration REV was introduced through racing in November 2001. It appears that it won the majority of the races it entered its first two years. In January 2002, two months before the introduction of the vehicles with the dealers, Bombardier invited media representatives to view the machine, under confidentiality agreements. The company also tested the REV with dealers in Lac-à-l'Eau-Claire in St-Alexis-des-Monts.

[132] Mr. Boisjoli testified that Bombardier produced the vehicles in 2002 for the 2003 Model Year which sold to the public from December 2002; it was a success from the beginning of sales. In 2003, the cross-country model was the only model produced; in 2004 the mountain model was introduced; in 2005 the touring model was introduced and, in 2007, the utility model was introduced. Since the introduction of the REV, Mr. Boisjoli testified that BRP won [REDACTED] points of market share (they went from [REDACTED] percent in North America; [REDACTED] percent in Scandinavia, and [REDACTED] percent of imports in Russia). In Canada, excluding the current market year, BRP has sold approximately [REDACTED] REV snowmobiles.

[133] The decision to proceed with the action against Arctic Cat was taken by him in 2011, following discussions with the investment and risk committee. He testified that Arctic Cat began infringing in the spring 2008 in small volumes. In 2008 and 2009, the snowmobile industry suffered greatly during the economic crisis; BRP lost [REDACTED] of business in six months. Mr. Boisjoli testified that by summer 2010, the company's position was recovering. In the spring

2011, Arctic Cat came out with a line of snowmobiles that, in Mr. Boisjoli's opinion, represented a "complete copy" of the REV, justifying a decision to go to litigation in the fall of 2011. Mr. Boisjoli also testified about other litigation between BRP and Arctic Cat as well as the relationships BRP has with Yamaha and Polaris.

[134] On cross-examinations, questions were asked about the decision to litigate this matter and not to prosecute cases where other manufacturers could be alleged to violate BRP's Patents. I was struck in particular by questions on whether BRP was trying to take Arctic Cat out of the market (no) and whether it would take a licence for its Patents at the right price (yes) and the settlement negotiations in this litigation.

(3) Bruno Girouard

[135] Bruno Girouard is one of the named inventors on every one of the Patents-in-suit. He testified about the development of the alleged inventions.

[136] Mr. Girouard is an engineer with expertise in vehicle dynamics with the Advanced Concept Group for snowmobiles at BRP, a position he has held since 2006. He also held this position at Bombardier between August 1996 and August 2001, including when the REV was invented. In 1995, he graduated with a degree in Mechanical Engineering from the École de technologie supérieure de Montréal. Mr. Girouard is a member of the Ordre des ingénieurs du Québec.

[137] Mr. Girouard testified about the snowmobile platforms at Bombardier that existed prior to the REV, including the F2000 from the beginning of the 1990s with a 3 cylinder engine, a

subsequent platform, the S2000 with a 2 cylinder engine, the CK3 which appeared in 1998 and the ZX which was a 2 cylinder light model to replace the S2000. Mr. Girouard explained certain scientific/engineering concepts in his testimony:

- Suspension geometry (the points of attachment between different items which are defined by the points of rotation such as where the skis attach to a snowmobile)
- Inertia (resistance to change in movement)
- Linear inertia (the acceleration of a mass in a straight line)
- Polar or rotational inertia (as a mass turns on an axis, its acceleration can also be measured; the further a mass is from the axis the more resistance there is, and the closer or more centralized it is the less resistance there will be)

[138] Mr. Girouard testified about the course of events leading to the development of the REV, including his first experience riding a snowmobile at the Advanced Concept Group (he found the traditional position to amplify the bumpy terrain and made it difficult to stand). Following a conversation with Mr. Fecteau, the other inventor identified in the four Patents-in-suit, they decided to make a Computer assisted drawing (CAD) of a snowmobile with an advanced rider position.

[139] Following more experimentation riding a conventional snowmobile, Mr. Girouard came up with the idea of including the mass of the rider in determining the centre of gravity and to develop a “system” representing both the rider and the snowmobile. By moving the rider from the rear of the vehicle to the centre of the “system” the polar inertia is reduced. In such a system, there are three centres of gravity (of the vehicle, of the rider, and of the vehicle and rider combined) which have a linear relationship between them. When a rider on such a system stands up, he detaches from the vehicle and it can move freely beneath. Mr. Girouard and Mr. Fecteau discussed ways to

decrease the problem of ‘louvoiement’ or darting (where the snowmobile will jump between tracks that it is going over), which they suspected could be improved by rigidifying the frame and reducing torsion, or the twisting of the frame.

[140] In the summer of 1997, he and Mr. Fecteau kept a prototype from a different model of snowmobile that the Advanced Concept Group was developing and modified it to fit their ideas; that became the non-functional “Buck”. They noticed that as they moved the rider forward, the engine could be moved backward to maintain the desired centre of gravity.

[141] In August 1997, the Advanced Concept Group was informed that the REV was to become the new official project with a mandate to have the vehicle running in the winter.

[142] Mr. Girouard testified that they measured the Buck using key points of the feet, seat, and hands in relation to the drive axle of the vehicle. They used Mr. Girouard, Mr. Fecteau as well as another worker because they felt that they were representative of the 50th-percentile male which was the target rider (the vehicle also had to be capable of being ridden by persons between the 5th-percentile female and the 95th-percentile male).

[143] They then built a first prototype according to these measurements and the desired design structure (i.e., handlebars in front of motor, using a pyramidal frame although they had to use less than perfectly straight ‘membrures’ to accommodate other elements, but including a crossbar to reinforce the design, an upper column, placement of an engine in the engine cradle, a shortened tunnel, a fuel tank under the seat rather than in front of it). Mr. Girouard also testified to some

reluctance on the part of other engineers and officials at Bombardier to accept his concepts regarding the polar inertia and the centralization of the masses, as well as a willingness of the market to adapt to the vehicle.

[144] Mr. Girouard testified that by late January, early February of 1998, the REV was ready for a first trial in the snow in a private area on BRP's grounds outside the workshop. As a result of their initial tests, they learned of a need to redesign certain elements (the knee placement was not comfortable and the handlebars were too far forward). Owing to poor snow conditions, they also tested the vehicle on other paths closed to the public; Mr. Girouard testified that one time they met a person, but the prototype was between two other vehicles. When they aligned the drive axle of the prototype with the drive axle of a traditional snowmobile, Mr. Girouard showed a photo where the rider on the REV was approximately 30 cm forward of the other rider.

[145] The team calculated the centres of gravity of the vehicle and system by raising the vehicle on three scales and tipping it to make the calculations. They made modifications to the vehicle following their testing and found it had improved results (more efficient in bumps, more comfortable, more maneuverable) and also consulted an ergonomist (Peter Watson). They took inertia measurements again and compared them to measurements they made from other vehicles (snowmobiles, ATV, motorcycles) both with and without riders; for the prototype, the difference in inertias with and without rider was small. Mr. Girouard presented this data to a POC in the spring of 1998 to show that, even though the rider was placed higher on the vehicle, it was no more likely to tip over than a conventional snowmobile.

[146] The Product Orientation Committee, having considered the first prototype, requested additional prototypes and further development to assess whether it could be used in multiple market segments or just in snowcross. He testified that in the next prototype, they reduced the height and modified the place for the knees to better suit rider movement when turning, and they made alterations to the rear portion of the pyramidal structure. The third prototype, from January 1999, was modified to be able to represent the touring (with a longer tunnel and capable for longer distances) and the mountain (with a much more aggressive drive track to propel the snowmobile through the snow) market segments. The team tested the third prototype in Colorado in January 1999 with a BRP associate. The fourth prototype, from March 1999, incorporated the previous improvements and was equipped with a 440 cc engine (the type of engine used in snowcross competitions at that time).

[147] Mr. Girouard testified that in March 1999, a POC comprised of senior management tested the four prototypes at Cabano. Despite some continuing reservations on the part of some BRP officials, the REV project was transferred from the Advanced Concept Group to the engineering department. At that time, it was anticipated that the REV would only be launched in the sport segment. He testified that Bombardier invited a Finnish race, Janne Tapio, to test the 4th prototype (painted black for confidentiality) in Chibougamau in April of 1999, where it was determined that the REV was approximately 3 seconds faster on a race course than a traditional snowmobile.

[148] Mr. Girouard continued to follow the development of the REV once it was with the engineering department until his departure from Bombardier in 2001. He testified about the

continued evolution of the REV frame, engine cradle (the final product cradle is closed on the right side and open on the left to permit access to the motor), seat shape, and fuel tank placement.

[149] Mr. Girouard testified that the angles (foot, hip, and hands) on a REV snowmobile have a particular configuration and relationship to one another that is unlike the prior art in snowmobiles ("Alors le plus grand des angles est celui qui est situé entre la ligne qui passe du guidon à l'assise et la deuxième ligne qui passe de l'assise au pied. Alors cet angle-là est plus grand que les deux autres. Ce qui n'était pas le cas antérieurement." [TRANSLATION] "The biggest angle is the one between the line that goes from the handlebar to the base, and the second one that goes from the base to the feet. So that is greater than the two others, which wasn't the case previously.")

[150] For the filing of the patent application, the team took measurements on the Buck, the first prototype and the fourth prototype. The measurements in the Patents match the first prototype, as the fourth had been transferred to the engineering department and was no longer available for the Advanced Concept Group to measure. Mr. Girouard testified that the only records of these measurements are those in the Patents. The 964 Patent, however, was drafted after Mr. Girouard's departure from Bombardier and he was not involved in that process.

[151] The cross-examination focused in large part on the measurements that were taken and used. Thus, the use of Messrs. Girouard and Fecteau, together with a co-worker as representing individuals near the 50th-percentile was raised. It was confirmed that the witness did not use a Hybrid III Mannequin, while the CAD modelling used the measurements of the 50th-percentile.

[152] Another focus of the cross-examination was about the “natural position” of a rider creating the new configuration, which does not appear in the Patents. Mr. Girouard contended that a rider forward position on traditional snowmobiles would only be temporary as it is not the natural position. The rider would go back to sitting towards the back. In fact, phrases like “biomechanically neutral” and “standard rider” were not in initial drafts of the Patents and appeared later.

[153] To questions about what Mr. Girouard considered the invention to be at the time of filing, he stated that the invention is about a snowmobile architecture with several benefits including the ability to rise using one’s legs and which brings the rider’s centre of gravity closer to that of the system, allowing for less motion on bumpy terrain; it also is a pyramidal frame with torsional rigidity and improved stability allowing the rider to maintain a forward position in all conditions.

[154] Mr. Girouard did not conduct a prior art search before the patent application and his knowledge of prior art snowmobiles was certainly not universal, but he was confident what he worked on was new (“je peux pas vous affirmer que j’avais l’information de toutes les motoneiges qui avaient existées dans le monde depuis le début. Toutefois, avec la quantité d’information y avait aucun indice qui nous laissait croire que ça avait déjà existé.” [TRANSLATION] “So I cannot say that I had the information about all the snowmobiles that ever came into being since the new world. However, with the quantum of information nothing led us to believe that it had ever existed.”)

[155] In re-examination, two issues were addressed. First, Mr. Girouard testified that the "Dreyfuss" is a well-known database used in product design. The anthropometric database consists of the measures taken of the range of body sizes in a population, arranging the data by percentiles of various populations. The DMU is a "digital mockup" that is built into the CAD system; the DMU used to develop the snowmobile represented the 50th-percentile male. While the data come from different sources, statistically speaking they are representative of the population; the differences between the DMU and the "Dreyfuss" are statistically insignificant.

[156] As questions were asked in cross-examination on testing conducted in Colorado in January 1999, Mr. Girouard was also asked to clarify what was the type of land in Colorado where the tests were carried out. He testified that his impression was that it was on "Crown lands", and while not private, there was a lot of snow and conditions were difficult. He did not recall seeing any other snowmobiles when carrying out the tests.

(4) Berthold Fecteau

[157] Mr. Fecteau is the co-inventor listed in each Patent-in-suit. He is a designer and technician ("technicien concepteur"). He graduated in 1974 from high school, specializing in technical drawing. He began working at Bombardier in 1974 and stayed for two-and-a-half years. Following a decade working elsewhere, he returned to Bombardier in 1987. In 1993, he joined the Advanced Concept Group where he worked until 2002, when he transferred to the Competition Department.

[158] Mr. Fecteau testified about his personal experience with snowmobiles, including a 1971 traditional snowmobile that he and his father modified to provide more control (they put the

engine in the front, made the seat more comfortable, and broadened the skis) and another one that he modified on his own to make it more race-like. He testified about how he rode on snowmobiles to improve their speed (riding up on the fuel tank with the handlebar pressed into his body) and about the difficulties in maintaining such a position.

[159] While working on the drawings for the ZX platform (a conventional snowmobile) in 1995-1996, he made a drawing that had the driver in the centre of the vehicle to see what such a machine would look like (not an official project). At the time he made the drawing, he did not share it with anyone at Bombardier.

[160] Mr. Girouard and Mr. Fecteau took a CK3 model of snowmobile and rearranged it to form a mockup, which included watercraft components (seat, hood); the tunnel was shortened by a foot, but the drive track remained the same length as a conventional snowmobile. As a hobby, Mr. Fecteau also worked in his basement on ways to improve the rigidity of the frame using triangulation, but encountered obstacles to installing tubing (e.g., motor in the way, muffler in the way).

[161] Following the decision to make the REV project official in the fall of 1997, Mr. Fecteau designed vehicle layouts to determine placement of the components in order to permit the manufacturing of the parts. Following the manufacture of the parts, Mr. Fecteau instructed the mechanics about the assembly of the prototype.

[162] Difficulties were encountered in developing the REV: the machine required a new frame, a new front suspension, a new steering column, new footrests, new oil reservoirs, new air boxes, new gas tank, and new exhaust system. The prototype kept the engine, the drive track, the handlebars (although they were repositioned), and the rear suspension from a conventional snowmobile. Gaining acceptance from many engineers at Bombardier was difficult.

[163] The first test ride on the first prototype from the Advanced Concept Group occurred in the winter of 1998 on Bombardier grounds near the workshop. Owing to the poor winter conditions of 1998, they took the snowmobile on another trail that was usable in the forest. In the spring of 1998, the team completed the second prototype. The third and fourth prototypes were made at the same time, one of which was adapted to be a mountain or touring vehicle and the other was made for snowcross with a competition engine. Mr. Fecteau testified that the four prototypes were tested by senior management at Bombardier Center in Cabano where the company owns private trails.

[164] Mr. Fecteau's contribution in the drafting of the Patents was limited.

[165] A significant portion of the cross-examination was dedicated to the measurements of the 50^{th}-percentile. It was established that he was not familiar with "Dreyfuss", or for that matter, the measurements found in figures 19 and 20 of the 106 Patent and the 813 Patent. The cross-examination even went into a comparison, on the basis of a photograph of the design team, of the three persons' measurements who were used in the early development of the new configuration in order to show the difference between the three.

[166] During the cross-examination, it was discussed what appears to be a small machine operating on snow that is referred to as a SnoScoot. In re-examination, Mr. Fecteau explained further why he did not consider the SnoScoot as a snowmobile: it is very small and it is not allowed on trails, it goes approximately 20 km per hour, the riders do not appear to be comfortable and the measurements of the riders in the promotional pictures are unknown.

(5) Jérôme Wubbolts

[167] Mr. Wubbolts testified about the 264 Patent for which he is an inventor with Messrs. Girouard and Fecteau, as well as Ms. Anne-Marie Dion.

[168] Mr. Wubbolts is a technical service manager in the Centre de technologies avancées at BRP (and a partnership with the University of Sherbrooke), where he is responsible for prototyping, assembly, fabrication, and testing of prototypes. He graduated from McGill University in 1989 with a degree in Mechanical Engineering and is a member of the Quebec Order of Engineers. Mr. Wubbolts joined Bombardier in 1995 as a project engineer in the Ski-Doo Engineering Department.

[169] Mr. Wubbolts testified that he worked on the CK3 platform and the ZX platform on the chassis development. He worked with Mr. Fecteau on the CK chassis and met Mr. Girouard during work on the ZX platform. He first learned of the REV in the spring of 1997 when he visited the Advance Concept Group workshop and saw the mockup they had built. He was impressed with the design for bringing the rider forward and centralizing the masses.

[170] In the fall of 1997, Mr. Fecteau and Mr. Girouard invited Mr. Wubbolts to discuss the assembly of the components given his expertise with the assembly line and manufacturing techniques. He was impressed by the advantages involved with the pyramidal frame which "increases the beam": the increased height greatly absorbs and stiffens the structure and it transfers the load from the front to the rear on the opposite side with more torsional resistance. He testified that he had never seen such a structure on a snowmobile.

[171] Mr. Wubbolts first drove the REV in April 1999 during the testing at Chibougamau. Riding it was "amazing" and it absorbed bumps very well; it also turned and changed direction very quickly. Mr. Wubbolts testified that these tests were "strictly confidential" and they drove the REV at nighttime and on specially created trails.

[172] As a named inventor in the 264 Patent (the pyramidal frame), he was responsible for modifying the frame and making it more producible. He and a CAD designer, Anne-Marie Dion, designed the pyramidal frame to have two factory positions for the steering handle axis. They also changed the metal structure to an aluminum extrusion instead (figure 28 of the Patent for good view). They also split the left side and right side tunnels (which were then fastened together using the radiator) and opened up the left-side of the engine cradle to facilitate assembly of the engine.

[173] Mr. Wubbolts testified that in September 1999, he performed tests on the chassis including a torsional test to measure the loads on the front of the snowmobile and how much was deflected by the rigidity of the frame (a load is applied to the skis and the upward movement of the chassis is measured). The also did tests on the ZX chassis to compare the REV results: the REV required

roughly 6.25 times more load to get the same movement and is, therefore, much more rigid torsionally. An Arctic Cat snowmobile frame was also measured for comparative purposes. Figure 30 of the Patent provides a graphical representation of the loads that were measured.

[174] The cross-examination focused largely on the testing that was conducted of the chassis. In re-examination, the witness was able to address in more details how the testing was done. About the torsion and the flexion/bending and how the REV chassis was fixed on the table for the testing, Mr. Wubbolts testified that the drive axle is mounted to a base plate on the table and two other mounting points on either side of the tunnel are attached toward the table. He testified that the same mounting mechanism was used for testing the Arctic Cat chassis as well as the ZX chassis.

(6) Peter Watson

[175] Mr. Watson is a consulting ergonomist and is the owner/founder of a consulting company called Human Works Incorporated, based in Thunder Bay. The company provides a full range of ergonomic services, including office, industrial, and design ergonomics. He completed a Bachelor of Science in Zoology at the University of Manitoba in 1979 and an Honours Bachelor of Science in Human Kinetics at the University of Guelph in 1982. He also has a Master's of Science in Ergonomics from the Loughborough University of Technology (England), earned in 1993. For his Master's degree, he conducted an ergonomic evaluation of the locomotive used in the English Channel Tunnel between the United Kingdom and France.

[176] Mr. Watson testified about the field of ergonomics, providing illustrative examples to explain what ergonomists do: improving designs to make products safer or more efficient. He also

testified about anthropometry: the study of "people, their different sizes, shapes and ranges based on age, gender, and race." He explained that an ergonomist would use data collected to optimize equipment, furniture, clothing, etc. for particular ranges of people. Mr. Watson testified that generally they will buy access to larger population data or, on a smaller scale, collect the data personally.

[177] Mr. Watson testified that he has experience using Computer Assisted Drawing software incorporating persons of particular percentiles. He testified that the 50th-percentile is the largest user group and is also the median. A percentile is determined when a survey is taken and the full range sets out people from the smallest to the largest; with a 50th-percentile, half of the populations is smaller and half is larger. The 5th and 95th percentiles are also usually used as range limits because beyond those percentiles it is very difficult to accommodate without being cost-prohibitive.

[178] He described biomechanics as "the position that you need to be in to actually use the snowmobile. And it's basically is this a good position, a safe position and a comfortable position or is it a bad position that can put you at risk of some kind of injury or it's very uncomfortable" and "it's the way people move to accomplish a task." He described five driving tasks of a snowmobile: accelerating, decelerating in a straight line, straight line speed, and turning left or turning right.

[179] In April 1998, Mr. Watson was asked to conduct testing on what was called the Café Racer project in comparison to the MXZ 670 Ski-Doo. He rode the snowmobiles near the Bombardier

research and development building at Valcourt. During the transportation to and from the testing, the Café Racer prototype was covered. With the Café Racer, the hips were above the knee, the ankle was slightly behind the knee, and the feet were in a different position. Mr. Watson testified that in the Café Racer, the rider was primarily using the legs to manage bumps with the handlebars just to steer rather than to manage bumps using the upper body. Mr. Watson characterized the Café Racer as a "substantial improvement" over the models he had studied in 1994.

[180] In March 2000, he reviewed the second prototype in a report for BRP's Denis Lapointe. He compared the Café Racer REV prototype to the P1 REV prototype following tests at Cabano. While the rider positioning was similar, they were slightly different (joint angles are slightly different).

[181] In the 964 Patent, Mr. Watson is listed as an inventor (the hip above the knee patent). He testified that he discussed with Mr. Cutler, who was instrumental in drafting the Patent, certain aspects of the design for information to be filed (the variances in the numbers, the 50th-percentile male and the importance of the hips above the knees). He also had discussions with Mr. Cutler regarding the wording of some aspects of the 106 Patent. Mr. Watson testified that he (and Mr. Cutler) met with an examiner from the Canadian Patent Office regarding the 106 Patent about the wording of "neutral biomechanic position" or "biomechanically neutral position" (this is wording used by Mr. Watson based on his experience and educational background as an ergonomist).

[182] On cross-examination, the witness asserted that an individual who would fit within the 50th-percentile may actually have limbs that are not at the 50th-percentile for that particular limb. It

is rather the combination that produced the 50th-percentile. For instance, the witness indicated that he is at the 40th-percentile for his upper body but is still at around the 50th-percentile for the whole body. This witness expressed the view that the "Dreyfuss" data is outdated compared to those compiled by the U.S. Military. That prompted a short re-examination during which Mr. Watson established that the difference in the data would be small and would be insignificant given the kind of work that was done with respect to the new configuration of the snowmobiles.

(7) Steward Strickland

[183] Mr. Strickland is an intellectual property engineer with BRP, a position that he has held since June 2000. He has a Bachelor's degree in Mechanical Engineering that he obtained from McGill University in 2000. He is a member of the Order of Engineers of Quebec.

[184] Mr. Strickland testified about his role as an intellectual property engineer for BRP; he serves as a liaison between the BRP engineers and the outside law firm handling the company's patents and more generally intellectual property issues. He is also responsible for reviewing competitor patents to ensure that products made by the company do not infringe. Generally a patent application would be drafted for the US and then the same patent would be filed in Canada, unless alterations were required to suit Canadian patent law. Mr. Strickland testified that he first heard of the REV project soon after he started at Bombardier. He testified that Mr. Jonathan Cutler, his boss at the time, showed him a REV prototype and explained the seating position and the pyramidal frame.

[185] He “occasionally” had involvement with the 964 Patent, but the 106, 813, and 264 Patents had been filed prior to his arrival with the company. He testified that in 2006, BRP conducted a Preliminary Ergonomic Study on three competitor vehicles to determine whether or not those vehicles fell within claims in a pending US application. An engineer was responsible for conducting the measurements (including centre of gravity measurements) for him following certain criteria set by Mr. Strickland (vehicle full of fuel, particular steering, footrest, seat positions, and suspension static). They used Mr. Fecteau as a 50th-percentile male rider since he looked “pretty close” to the standard; Mr. Fecteau was placed in a “standard rider position” according to what the engineers understood that position to mean. The measurements were taken using a Computerized Measuring Machine (CMM), while other measurements were taken from a CAD drawing. They measured a 2006 Polaris Fusion 600 HO, a 2006 Yamaha Apex, and a 2006 Arctic Cat Crossfire. The report concluded that some of the measurements indicated that claims would have been infringed, but not all of the claims.

[186] He was asked in 2008 to do similar measurements in relation to the Canadian patent claims from Patents 106, 813 and 964 (measurements relative to patents 345 and 795, which are not asserted in the litigation proceedings, were also conducted). They measured seven vehicles in 2008. Mr. Strickland also testified about correspondence he had with a company called PMG Technologies. For the 2008 testing, Mr. Strickland wanted to use a dummy representing the 50th-percentile human male and he contacted the company about the feasibility of acquiring one for use on the snowmobile (a Hybrid III dummy). He rented a dummy and provided it to the R&D centre to do the measurements; he testified that the dummy was placed on the vehicle the same way that Mr. Fecteau had been seated and the measurement protocol was the same. Mr. Strickland testified

that an intern carried out the measurements in 2008. He testified that he specifically required measurements about whether the hips were above the knees. The vehicles measured include a 2008 Arctic Cat Racing model, a 2008 Arctic Cat TZ1 LXR, a 2007 Arctic Cat Jaguar Z1 model, [REDACTED]. Based on the measurements, Mr. Strickland determined whether there was infringement of the REV Patents; charts were produced to reflect the results of the testing conducted (P-21, Tabs 4 and 5).

[187] The cross-examination established that Mr. Strickland does not have education concerning patent law, including his knowledge of text books. Although Mr. Strickland received some training in patent drafting, he does not possess any expertise in the law proper.

[188] Two other areas covered during cross-examination deserve mentioning. First, although the witness would conduct some prior art search, he would consult with other BRP engineers about prior art. Second, the cross-examination established that Mr. Strickland helped somewhat in the preparation of what became the 964 Patent. Mr. Strickland confirmed that he provided the drawing, without the numbers on it, that was to represent the prior art snowmobile, that is a BRP snowmobile before the changes allegedly taught by the 964 Patent are implemented. That figure 1 of the “964” Patent was then compared to figure 1 of the “106” Patent, which is also presented as prior art representing a BRP snowmobile before the changes taught by the Patent are implemented. On their face, the drawings are different: the positions of the hips, of the ankles, of the knees and of the arms are different from one figure to the other. It is as if figure 1 of 964 depicts the rider sitting on the seat close to the front of the snowmobile.

[189] In re-examination, an attempt was made at explaining the difference between the two. It seems that there existed different platforms from the MXZ platform in 1999 (one is an MXZ snowmobile on the ZX chassis and the other is an MXZ on the S-2000 chassis), thus accounting for the (significant) difference. That may be, but a simple examination of the two figures would tend to reveal that the two riders are seated in different spots, one being clearly seated towards the back of the seat. That would ostensibly change the position of the ankles, knees, hips, arms, as well as the angle of the back of the rider in reference to the seat position.

(8) Jonathan Cutler

[190] Mr. Cutler is a patent lawyer with degrees in civil law and common law. He obtained an engineering degree from McGill University in 1991. He is a member of the Quebec, Massachusetts, and New York bars, and is a registered Canadian patent agent and registered US patent attorney. He is a member of the Quebec Order of Engineers. In September of 1999, Mr. Cutler joined Bombardier as legal counsel dealing with intellectual property issues in the recreational products group. As he volunteered in his testimony, he was by himself as there was no IP department and he had never seen a snowmobile before starting work at BRP (transcripts, February 11, 2015, P.190). In fact, he had been a patent agent for one year only before he joined BRP; the 106 Patent was the first patent he prosecuted for BRP.

[191] Mr. Cutler testified about his involvement with the application that resulted in the 106 and 813 Patents. Not only did Me Cutler have an extremely limited knowledge of snowmobiles, but he was under time pressure from the moment he joined BRP in September 1999. Since an application had already been filed in December 1998, he knew at that time that the one year deadline they had

to "sort of augment the application or beef it up or claim internal priority" was close. He testified that he was advised to continue the patent application. He engaged outside counsel from a US firm who was as much of a neophyte when it comes to snowmobiles, to assist with the application process (Jeff Karceski). He and Mr. Karceski met with Mr. Girouard to have the invention explained to them. Mr. Cutler and Mr. Karceski then considered how to claim the snowmobile in patent form ("it seemed to us that we should claim the snowmobile in terms of its structure and arrangement so that the rider, you know, is, in this case, positioned in a certain way to achieve the result that he wanted to achieve." (transcripts, February 11, 2015, at p. 196). Thus, the decision to draft the disclosure and the claims of Patents 106 and 813 was made between October 1999 and the filing date of December 23, 1999, by lawyers who had not even driven a snowmobile before.

[192] Mr. Cutler testified that, as they began drafting a new application, they did not have measurements or reference points. Eventually, they decided to standardize the rider; Mr. Cutler testified that he met someone from the design department who provided him with a "Dreyfuss" book. The last page of the provisional application (P-6) shows the "Dreyfuss" diagram he received. He provided the drawing to Mr. Girouard and decided to standardize the invention at a 50^{th}-percentile male; following this, Mr. Girouard provided numbers and representative drawings for use in the Patent on November 24, 1999. The Court is struck by how much improvisation there was in the drafting of the application, between October 1999 and December 1999. Neither counsel drafting the patent application has experience, they are instructed by one of the inventors, Mr. Bruno Girouard, who is also inexperienced. Mr. Cutler explains:

> So I give this back to Bruno. I say, Bruno, here's your scan. Right? We've come up with a way in words that we think will describe your invention. Let's standardize at the 50^{th} percentile male. Can you please -- and this is where the numbers come from.

> Bruno goes back and takes these numbers and crunches. I mean, I didn't -- I wasn't watching what he was doing, and he comes back to us and that's where the numbers of the patent application come from, because they were numbers that Bruno derived from using this particular standard.
>
> COUNSEL: Did Mr. Girouard tell you how he derived those numbers, what he measured, how he measured them?
>
> MR. CUTLER: No.
>
> COUNSEL: No.
>
> MR. CUTLER: He didn't.
> So what he did was he drew a number of -- so if you go back a few pages, right.
>
> (transcripts, February 11, 2015, p. 203-204)

[193] As he put it at page 206, Mr. Girouard "did all the math himself" (transcripts, February 12, 2015, at p. 147).

[194] Mr. Cutler testified about exhibit P-6, the provisional application filed November 26, 1999, under US law. A provisional application provides "the right to have a small filing fee and a filing date but it's not examined." He testified that, since inventiveness in a patent application is measured with respect to a filing date, a US provisional application is of benefit, especially as US law privileged US-filed applications at the relevant time. After P-6 was filed, it was circulated to Mr. Girouard and Mr. Fecteau, and some other BRP officials. The application that eventually became the 106 Patent was then filed in Canada on December 23, 1999, with a priority date from an earlier filed application (P-5).

[195] Mr. Cutler testified about the prosecution history for the 106 Patent which lasted many years. The prosecution started close to four years after the filing of December 23, 1999. On August 8, 2003, he sent a letter to the Patent Office requesting examination of the application. At this time, the corresponding American application was undergoing examination in that country and BRP had chosen not to start the Canadian process in the meantime. They voluntarily amended the application at that time based on certain feedback from the American examiner (for concerns they were claiming a human being, they substituted in the language about standard rider and a description of the standard rider). They also provided the Canadian Patent Office with an Information Disclosure Statement about the prior art they were aware of in anticipation of a request for information (including the Yamaha SnoScoot). Mr. Cutler also testified about the requisitions from the Canadian examiner (P-24, Tab 4). The examiner made three rejections of the application: novelty based on a patent application called Stephenson, obviousness by combining the Stephenson with Yasui applications (Yasui relates to the SnoScoot), and a general obviousness issue with the general common knowledge in the prior art (patent applications are referred to using the name of the inventor, e.g. Stephenson or Yasui).

[196] In response to the requisition, Mr. Cutler testified that the application was then separated into divisional applications according to the inventions that the examiner had identified (Group A resulted in the 106 application; Group B to the 813 application; Group D and Group C are not relevant to this case). BRP responded to the requisition (P-24, Tab 6). BRP restructured the claims to only apply to the Group A claims and argued that the indefinite characterization of the claims was an error, as well as provided information of other relevant art. In particular, they argued that

Yasui does not teach that a tunnel is desirable and therefore should not be combined with the Stephenson patent (a snowmobile designed to float).

[197] The patent application was allowed. Following the allowance of the patent, Mr. Cutler tried to amend the application with an (Rule 32) amendment to bring it in line with the US application, by removing references to toeholds. Mr. Cutler testified that the examiner disallowed this amendment request because it removed an element from the claim. In response, BRP decided to withdraw the final fee it had paid and have the application go abandoned with an ability to reinstate it within one year (they did within 13 days). The reinstatement then allowed the patent application to be re-examined without the toeholds (P-24, Tab 13).

[198] Mr. Cutler testified that, on re-examination, the examiner came to believe that the application covered two inventions and had concerns about the standard rider and standard position being indefinite. Mr. Cutler decided to seek a meeting with the examiner. At a meeting held in February 2006 with the patent examiner, BRP brought ergonomist Peter Watson, together with several snowmobiles (the REV and prior art machines). Mr. Watson suggested during the meeting that when they were discussing a standard position, they were talking about a biomechanically neutral position. The examiner suggested that if the “biomechanically neutral position” language were inserted, he would find the application acceptable. They subsequently amended the language to “biomechanically neutral position”. (P-24, Tab 18).

[199] Mr. Cutler testified briefly about the 813 Patent as being a divisional patent of the 106 application; it related to the claims characterized as Group B. He testified that "at a very high level, they took the same course of prosecution as did the earlier patent application, its parent."

[200] Mr. Cutler testified also about the prosecution history of the 964 Patent (P-27). The application which led to the 964 Patent (P-27) was filed on November 15, 2002. The patent examiner raised a novelty issue with the Yasui patent (the SnoScoot) and his understanding of the teaching of Yasui; he also complained of the use of trademarks not being identified as such in the application and of the quality of the drawings submitted (P-27, Tab 3). BRP responded (P-24, Tab 4). They changed the drawing sheets, amended the claims to better define the invention, and identified the trademarks; they also explained why Yasui did not anticipate or render the claims not novel (they focused on the tunnel which is not a feature of Yasui which instead teaches a tubular construction).

[201] The examiner then issued a second requisition where he rejected the claims for obviousness by combining Yasui with a secondary reference, Irvine; he also again complained about the quality of the drawings. BRP again responded (P-27, Tab 7). They replaced the drawing sheets and argued that Yasui specifically taught against tunnels and advocated the removal of the tunnel, so it could not be combined to render the claims obvious; they also disputed that the rider in Yasui was the 50^{th}-percentile male. The application as amended was allowed (P-24, Tab 8).

[202] Mr. Cutler testified about the prosecution history of the 264 Patent (P-29). He testified that, while the application claimed a "frame comprising", the Patent issued claimed "a snowmobile

comprising." This change was due to the frame assembly only being suited to snowmobiles and not, as initially considered by Mr. Girouard and Mr. Fecteau, a wheeled vehicle as well; accordingly, they narrowed the claims for the 264.

[203] Mr. Cutler also testified about Exhibit D-2: the letter from BRP to Ole Tweet of AC. He indicated that the letter was sent out of an abundance of caution to comply with a US requirement that, in order to claim pre-grant damages, a patent holder must have provided actual notice. At the time the letter was sent, BRP had no knowledge of any infringement by Arctic Cat and a similar letter was sent to Polaris.

[204] The cross-examination showed the many and significant discrepancies that exist with the measurements of the rider used in various patents. The witness was not able to explain where the measurements came from and how there can be such discrepancies. It does not appear that much attention was paid to that issue.

[205] The witness confirmed during the cross-examination that the phrase "biomechanically neutral" was new to him when it was used by Mr. Watson during the interview with the Canadian examiner in February 2006. Indeed, the only reason for adopting such terminology was for the purpose of satisfying the concerns raised by the examiner.

[206] There was also extensive questioning of Mr. Cutler about attempts made in the U.S. at patenting, resulting in some cases in applications not issuing to patent (e.g. the 268 US

application). Indeed, there was some interest in comparing with litigation in the U.S., but valid objections curtailed the cross-examination on that front.

[207] The re-examination gave an opportunity to the witness to clarify why "metrics" were used instead of relying on a standard rider. Mr. Cutler explained that the American counsel was satisfied that the person skilled in the art would understand the invention. However, Mr. Cutler was "a bit uncomfortable with that" (transcripts, February 17, 2015, at p.130). Without disagreeing, he preferred something more definite. That is how an effort was undertaken to standardize the rider. The standard rider became a set of dimensions and attachment points. In essence, Mr. Cutler thought metrics could not hurt and they might help.

[208] The Court draws from the candid testimony of Mr. Cutler that the drafting model of the Patents (106 and 813) came about in the fall of 1999, with drafters unfamiliar with snowmobile and an instructing inventor who seems to have derived measurements from observations of what was considered a 50^{th}-percentile male sitting on a reconfigured snowmobile. His evidence does not elucidate how the measurements were arrived at or how much of a difference exists with measurements that would have been taken from the conventional snowmobile. In other words, the measurements were only meant to represent the new structure and construction.

[209] The same indirect technique of offering measurements of a standard rider sitting on a reconfigured snowmobile was used in the drafting of the 964 Patent.

[210] There is no indication of the level of change supposed to result from the various measurements, or what is produced by the various possible combinations given the ranges incorporated in the measurements. What is striking in my view in the testimony of Mr. Cutler is the lack of an explanation as to the correlation between the measurements and the new configuration. Mr. Cutler, one of the principal drafters of the Patents, takes his distance from the measurements of the 106 and 813 Patents that came exclusively from the inventors. It is very much unclear what they represent and the use that can be made of them following his testimony, Mr. Cutler disassociated himself completely from those measurements other than having recommended that they be included.

[211] For something that is presented as revolutionary, one is left with the distinct impression of a lack of diligent action and rigor. It has certainly not been clear on this record that a measure of specialized expertise was applied to the drafting of their "rider forward" Patents for instance. Indeed, it continues to be very much unclear how the indirect drafting technique used allows ascertaining what the invention is. The use of figures 19 and 20 in the 106 Patent was never explained either. Why have those figures included? What were they supposed to add?

[212] The question came up regularly during the trial. How does one go from measurements to the reconfiguration contemplated by the Patents? Mr. Cutler's testimony did not assist in answering the question.

(9) Robert Strauss

[213] Mr. Strauss is the owner/operator of Rob's Performance Motorsports in Johnson Creek, Wisconsin. The store sells snowmobiles, ATVs, personal watercraft, and UTVs as well as PACs (Parts, Accessories, and Clothing). The company has been operating since 1982. Mr. Strauss testified about his involvement with, and his enthusiasm for, the REV.

[214] In 2001, he was invited by Mr. Boisjoli to test a new vehicle developed by BRP. The group went to the BRP facility in Cabano, north of Quebec City, where they went through "the normal formalities that I had always been accustomed to, the non-disclosure and the talk about the security of what we were going to do." They were shown a vehicle on a table that, to Mr. Strauss, "represented a complete departure" from vehicles in the snowmobile industry. He compared the snowmobile to a seesaw where the rider would sit at the fulcrum point rather than at the rear of the vehicle. He testified that the fulcrum is where a rider would want to sit, especially for aggressive riding, but traditionally the steering column configurations would get in the way and rider fatigue would prevent long-term maintenance of such a position. When he rode the vehicle it took him about five minutes to adapt. He testified about his immediate eagerness to get the vehicle into his store to sell to customers.

[215] The launch of the REV took place, in the racing world, at Spirit Mountain in Duluth, Minnesota, in late November 2001. He was in attendance to assist some racers that his dealership supports and he saw Ski-Doo unveil the REV publicly. He testified that there was "buzz in the

paddock or the pit area like no other time" and that the buzz spread on forums and elsewhere in the snowmobile community.

[216] When BRP launched the REV for sale at a Club (sales convention) in late February or March 2002, the "sales went through the roof" for the product. Just prior to the Club, Bombardier provided the dealers with prototypes that customers could test. Mr. Strauss indicated that customers of other brands of snowmobiles became Ski-Doo customers because of the REV. Over the course of 12 months when the REV was introduced, Mr. Strauss indicated that he went from third in his area to first place. He testified that eventually competitor snowmobiles, including Polaris, incorporated REV technology into their machines.

[217] Mr. Strauss testified about the importance to his company and livelihood of the PAC (Parts, Accessories & Clothing) side of his business and listed various examples of products (e.g., helmets, clothing, customizable colour panels) which are branded and contribute to higher profit margins than the vehicles. He indicated that his company averages about [REDACTED]. Prior to the REV, there was "no concentration on PAC business from the manufacturers." He averages around [REDACTED] over a three year period per vehicle. Mr. Strauss testified about the Blade snowmobile with a picture of the vehicle (P-22). He indicated that he had ridden the vehicle for many miles from the early 2000s well before his first encounter with the REV. He described it as conventional with good execution of suspension development and that a rider would sit the same way as they would with any other prior snowmobile. As for the Yamaha SnoScoot, he described it as being designed for children and it did not change the snowmobiling world.

[218] The cross-examination of Mr. Strauss confirmed that he is an enthusiastic endorser of the BRP products. He recalled clearly the two-hour drive of the REV in Cabano in 2001 and stressed that his assessment was with respect to marketability, as he was not invited to assess the mechanics of the vehicle.

(10) Bernard Guy

[219] Mr. Guy is Vice-President, General Regional Director for the North American region for BRP; he has been in this position since June 2014. He is responsible for sales, marketing, after-market service, and network development for all BRP products except Evinrude products. He has a Bachelor degree in Mechanical Engineering and an MBA from Sherbrooke University. He was Director of Engineering for snowmobiles at BRP from 2000 to 2002, where he was responsible for engineering, research, and development for snowmobiles.

[220] Mr. Guy testified about the timeline for the development of the REV, using a timeline he had prepared for the litigation to help him with dates. He first heard about the REV near the end of 1998 when it was a hotly discussed topic in the engineering department. He first saw a prototype in early 1999, when he immediately noticed the difference in position and wondered if the rider would be sitting too high to be stable; he also noticed the pyramidal frame which he knew would make the snowmobile more rigid but also posed problems with how to place the components in the snowmobile.

[221] Mr. Guy testified that he first tested the prototype in winter 2000-2001 when he and project director Robert Handfield stayed late to try it on the isolated trails around the research centre.

When he (on a conventional ZX) was not able to keep up with Mr. Handfield (on the REV) owing to the bumps in the terrain, he was convinced that the REV would be a "sled" for the cross country segment, but was not convinced that it would work for the mountain or touring segments.

[222] When he became Director of Engineering for snowmobiles, the REV was at the production stage for the P2 vehicles. At the P2 stage, the focus is on functionality (does the snowmobile work or not) and at the P3 stage it is on reliability and endurance. At the P2 stage they also need to decide whether to proceed with "hard tooling" [REDACTED] or "soft tooling" [REDACTED] depending on how many vehicles they wanted to produce; Mr. Guy testified that at the end of winter 2001 they decided to invest in the hard tooling which allows for grand scale production.

[223] Prior to the launching of the REV there was much worry about whether the market would accept it. To help encourage acceptance/adoption of the REV, Mr. Guy testified that they took some extra steps in the 2001-2002 winter: they entered a prototype in an open mod racing class; invited media to a private trial so they could have articles prepared for January/February (just ahead of launching in March); they produced 160 P3 prototypes (100 more than normal) so that consumers could try out the vehicles prior to ordering; and they made a brochure explaining the development of the REV. These steps were planned at the end of 2000, beginning of 2001.

[224] Orders were made with vehicles delivered to dealerships between August and November 2002 (considered a 2003 model year). He testified that from the launch they went from third in the market (Polaris being first) to first place; prior to the launch they had around [REDACTED] of the market and at the end of 2003, they had a [REDACTED] market share (with the REV only in the

cross-country segment). Mr. Guy testified that currently BRP has [REDACTED] percent of the North American market.

[225] Mr. Guy also testified about the response the industry media had to the REV. Most of the articles collected in P-32 are in favour of the REV, but all agree that it is radically different. Mr. Guy also produced P-33, a binder of competitor reactions including criticism by Polaris of the REV for forcing riders to change the riding position.

[226] The same platform can be used for different segments (e.g., the chassis platform remains the same but a longer drive track is used for a mountain vehicle). Each model can have different packages; he compared it to the different trim packages. Utility vehicles can be on the REV XU platform but also can be adapted on other REV platforms, reflecting the range of utility snowmobiles. The cross-country segment was developed as an in-between model of snowmobile able to ride on trails and to go into the deeper snow. Mr. Guy explained that, since the snowmobile industry is a mature market, the manufacturers keep trying to find new sub-segments and niches to exploit. In December 2011, BRP purchased two Arctic Cat snowmobiles (an N800 and a F800; 2012 model year). These snowmobiles were purchased to be able to take measurements to determine if they infringed the REV Patents.

[227] Mr. Guy also discussed the SnoScoot. He testified that he had heard that Arctic Cat was arguing that the SnoScoot was prior art. He testified that it was a child-sized vehicle made by Yamaha in the late 1980s to early 1990s and had 8-12 horsepower with a maximum speed of 20 miles per hour. Although it has skis, an engine, etc. like a snowmobile, Mr. Guy does not believe

that it is prior art because an adult cannot sit on it in an advanced position, nor does it address the issue of speeding through bumps like the REV ("It practically absorbs no bumps. It just drives slowly over the bumps.").

[228] Mr. Guy testified about Exhibit P-35, an updated list of AC models from the 2007 to 2015 model years that BRP alleges are infringing; he stated that the information in the chart came from Arctic Cat brochures. He testified that BRP did not launch the lawsuit until December 2011 because the infringement occurred gradually on models with limited production runs and the company had other priorities during the financial crisis in 2008-2009. Mr. Guy stated that when they saw the introduction of the ProCross and ProClimb chassis, they felt that the "infringement appeared even more evident" and "too close to what we considered to be our intellectual property" and commenced the proceedings.

[229] Mr. Guy testified about damages based on analysis contained in Exhibit P-36. Mr. Guy provided documents setting out sales data and market share information collected by the International Snowmobile Manufacturer Association for BRP, Arctic Cat, Polaris, and Yamaha, by season and by segment between 1999 and 2014. He testified that the data showed the impact of the introduction of the REV in each segment (in 2002 in North America, before the REV, BRP had [REDACTED] of the cross country market; in 2003, it had [REDACTED]). He also testified about a list, created by the BRP Product Planning Department, of AC and BRP snowmobiles from 2007 to 2014 and in which segments the companies offer the snowmobiles. BRP had manufacturing capacity to produce the alleged lost sales of [REDACTED] units per year, as this number represents around [REDACTED] days of production which would be easy to add without

incurring additional expenses. He provided an Excel spreadsheet setting out all sales of BRP and Arctic Cat in Canada and the United States (each entry has province, manufacturer, model name, market segment, model year, platform, and number of units registered by state/province/model/country). He provided an Excel chart setting out the data for all manufacturers (Polaris, Arctic Cat, BRP, and Yamaha) from 2007 to 2014 with the sum of units sold per model each year.

[230] The BRP dealer network across Canada has approximately [REDACTED] dealers, across the 10 provinces and territories. Arctic Cat has approximately 20-50 fewer dealers than BRP. Mr. Guy stated that the size of the dealer network would not have prevented them from selling [REDACTED] additional units per year, as they sell approximately [REDACTED] snowmobiles per year.

[231] Mr. Guy testified about the practice of BRP with regard to granting licences for its technologies. He indicated that it was not usual practice for BRP to grant licences and the licences that he could think of over his 28 years' experience were related to judicial proceedings.

[232] Mr. Guy's cross-examination explained the circumstances under which some testing of the prototypes took place and the availability of information relating to the prototypes that were developed.

B. *AC's witnesses*

[233] Arctic Cat had also a number of witnesses who were heard at trial. As with the witnesses produced by BRP, only where the evidence of experts is relevant to an issue will there be reference to the experts.

(1) Brad Darling

[234] Mr. Darling, AC's corporate representative at trial, joined Arctic Cat in 2000 as a district sales manager in Southwestern Ontario. In October 2003 he became the National Sales Manager for Canada for Arctic Cat Sales Inc., until May 2008 when he became the North American Sales Director for Arctic Cat Sales Inc. In January 2011 he became the Vice-President and General Manager of Arctic Cat Inc.'s snowmobile division. Mr. Darling is not an engineer.

[235] Arctic Cat manufactures snowmobiles, ATVs and related parts, accessories, and clothing in Thief River Falls. Thief River Falls is a town of approximately 8,500 people in Northern Minnesota; Arctic Cat employs 1,300 people in Thief River Falls. The company employs a total of approximately 1,600 people. Arctic Cat Inc. manufactures the snowmobiles and Arctic Cat Sales Inc. sells the snowmobiles to the dealer network. Arctic Cat has a Canadian branch office in Winnipeg to service the Canadian dealer network. The snowmobile industry consists of four brands: Ski-Doo, Polaris, Arctic Cat and Yamaha. The four are members of the International Snowmobile Manufacturers Association (ISMA).

[236] Mr. Darling testified about the following snowmobile segments:

- Youth (for children under age 12; only goes 13 km per hours, limited gas capacity);

- Utility (customers using them for work; longer track, bigger skis, better flotation in snow, often a wider track, not high performance, increased storage and carrying capacity);

- Touring (generally two people, sometimes three people; lots of storage, sometimes out overnight, usually on a trail, lots of 'creature comforts' like heated seats and handlebars);

- Mountain (a longer track; usually off trail in deep powder);

- Performance (mostly on trails; shorter track, suspension and speed are important; snowcross racing fits in this category);

- Cross-over (a hybrid between the Mountain sled and Performance sled for on and off trails)

Referring to the so-called "Youth segment", the witness indicated that he owned an Arctic Cat Kitty Cat snowmobile and had seen many over time, including one at the Bombardier Museum.

[237] Arctic Cat is very active on the snowmobile racing circuit. Racing is used for research and development, but also for the purpose of building and marketing the brand. It appears that racing is a more important component of the Arctic Cat Brand than for BRP, yet Polaris and Ski Doo are active and certainly more active than Yamaha, the other major player in the industry.

[238] One of the main characteristics of a snowmobile owner is that he is loyal. He is middle aged and owns more than one snowmobile. Brand loyalty is high within all brands. It is therefore essential that customers be satisfied with the product. Significant emphasis is put on Arctic Cat dealers: they need to understand the product and the needs of customers. Thus training is offered.

Whenever a new product is launched, there is a measure of dissatisfaction coming mainly from glitches that appear. Dealerships are essential towards product satisfaction.

[239] While BRP requires its dealers to distribute its products exclusively, only 79% of the 198 Canadian Dealerships are exclusive dealers of AC products. As heard from other witnesses, Mr. Darling confirmed that AC too purchases snowmobiles from the competition in order to have a clear appreciation of the features of its snowmobiles. Similarly, he confirmed that manufacturers seek to minimize the number of different platforms. There will be many models, but they will show the same basic platform.

[240] Arctic Cat brochures and website (the alleged source of the information in Exhibits P-34 and P-35) are done by their marketing agency, Periscope. They often photograph the same snowmobile to represent multiple models (e.g., where the engine, track, gauges, suspension might be different); they either physically change the decals on the snowmobiles for the photographs or they can be photoshopped afterwards. As examples of this, Mr. Darling pointed to a photo purporting to be an M6000 Sno Pro 153 (a Mountain segment snowmobile) that was actually an XF (Crossover segment snowmobile) (Exhibit D-51); and a snowmobile purported to be a 2013 M800 162, but has a 153 inch track (Exhibit D-61). Mr. Darling noted that the photographs are taken of prototypes rather than production models and that the specifications have a disclaimer saying they are subject to change. He has not conducted a review of every model and every image in the brochures or on the Arctic Cat website. Mr. Darling indicated that once a unit goes to production, the Parts Illustration Manual will list accurate information.

[241] The witness showed that, at times, brochures created by AC are not accurate. The right and more accurate specifications are to be found in the parts manuals, if only because these manuals would be created after the production of snowmobiles has begun. He did not go beyond very limited instances.

[242] Mr. Darling testified about the magazines in the snowmobiling industry; he stated that there were seven magazines for the North American market. Arctic Cat (and the other manufacturers) shows the magazines and other media the product lines in what is called a "sneak peek", usually at the end of January. They let the magazines take some pictures, give them a "press kit", and let them sit on prototypes. After seeing the products, the media are under an embargo not to talk about the products. The media are then able to ride the prototypes and take more photos at an event called "Snow Shoot" which takes place at the end of February or beginning of March, in Colorado. Mr. Darling produced an example of a press kit from the 2012 model year (Exhibit D-50).

[243] Mr. Darling testified that Arctic Cat had a licence agreement with BRP that also included Suzuki, signed in April 2007 (Exhibit D-39). At the time the agreement was signed, all of Arctic Cat's 2007 model year snowmobiles were available to the public, including the allegedly infringing Jaguar and F series.

[244] A number of documents were introduced through this witness in the cross-examination conducted by BRP counsel. The witness was questioned on the support AC offered to its dealers.

[245] The witness was cross-examined about what constitutes a platform which corresponds, to some extent, to the chassis of the snowmobile. The chassis would include the suspension while the platform is “more of the tunnel and the front bulk head and the commonality”. The witness acknowledged that a press kit produced in early 2011 (exhibit D-50) referenced a “pyramidal design”. Similarly, AC was using the words “neutrally balanced rider” under their reference to the Twin Spar Chassis.

[246] Mr. Darling suggested during his examination-in-chief that some brochures would not be accurate as to the specifications of some snowmobiles presented therein. On cross-examination, the witness was asked about the 300 or so models produced by AC over the years. Although it is true that the witness had not been ordered to conduct a review of the models for the purpose of discovery, he can be asked about other models after he has suggested that some models are not properly described in the marketing documentation created by AC. The witness answered that he never checked all of the snowmobiles listed in P-34. It was confirmed that his knowledge is limited to what he offered during his examination-in-chief.

[247] The witness acknowledged that AC had the capacity to measure centers of gravity as early as 2000 (Exhibit P-52). The AC Twin Spar was designed for a rider forward position, which confirms the interest in the rider forward position. Furthermore, the examination of D-50 and D-57, two brochures prepared by AC about the 2012 technology, tend to demonstrate that the pyramidal structure adopted by AC transfers the “load” (force) received at the front to the frame through the shock absorbers.

[248] The re-examination of the witness addressed an issue raised during the cross-examination about the financial position of AC. While the cross-examination about the 2013 AC's annual report showed assets increased to $306M, from $255M the year earlier, and assets of $352M as of December 31, 2014 (without long term debt) according to the 10Q quarterly filing with the U.S. Security and Exchange Commission (Exhibit P-60), it was established in re-examination that, out of assets of $352M, $144M were tied up in inventory. In fact, AC listed $57M in cash and cash equivalents.

(2) Ken Fredrickson

[249] Mr. Fredrickson is a design engineer at Arctic Cat where he is responsible for designing snowmobiles using CAD programs. He has worked for Arctic Cat for 20 years. He attended a two-year technical college in Staples, Minnesota where he became a detailed draftsman, responsible for putting dimensions on part designs. He is a technician, not an engineer. He is a snowmobile enthusiast.

[250] Mr. Fredrickson testified about his work with CAD (Computer Aided Design), in particular a software program called Unigraphics. He stated that he was responsible for taking snowmobile components, putting them into a 3D CAD system, and then arranging and moving them around. When a snowmobile project is in the CAD, it will have a master layout (top level of all components in the vehicle) and other smaller layouts of components which get changed more frequently.

[251] He testified about the process for designing a snowmobile at Arctic Cat; they typically take the production unit for the previous year and will adjust and tweak certain components based on what people want to change. Mr. Fredrickson testified about a series of drawings of a Twin Spar snowmobile (but could not identify the particular model) (Exhibit D-68). About a layout of the F4 platform (D-71), he indicated that it showed an Arctic Cat snowmobile compared with a Ski-Doo ergo file. A coordinate measuring machine had been used to measure certain points on a Ski-Doo which he then imported into the Unigraphics software and connected the points with lines. He testified that he did not do anything with the file afterwards. He did not remember who gave the data to him, only that he was told it was from a Ski-Doo.

[252] On cross-examination, Mr. Fredrickson was questioned about where the engine would be positioned. He answered that it is located before the "front pig nose" (the front of the snowmobile) and the heat exchanger. He testified that he would not call that location as the "engine cradle". Although he had heard the term before, he had not used it himself.

[253] Exhibit P-69, which is U.S. Patent 8, 528, 863, was brought to his attention. Mr. Fredrickson is listed as one of the inventors for the Patent having the name "Snowmobile chassis with Tunnel". The Patent refers to "engine cradle" on numerous occasions. Although the 863 Patent focuses on the tunnel, as part of the chassis, which is lighter in weight, yet stronger, the Patent refers to the engine cradle without defining specifically what is meant other than stating that "(t)he engine cradle frame 106 is configured to form a space for receiving the engine (not shown) and also includes a front suspension support spar 108 that engages the tunnel 102". (Page 3, lines 15 to 18) The "engine cradle" was considered to be well known as being the space receiving the

engine. The witness, who acknowledged reviewing the patent application before it was filed, would refuse to agree that the engine cradle of his 863 Patent is the engine cradle of the 264 Patent. That remained his answer in spite of the fact that claims 6, 7 and 9 are all referring to "(a) chassis for a snowmobile, the chassis comprising a front assembly including an engine cradle and front suspension mounts." Finally, Mr. Fredrickson readily acknowledged that Figure 1 of the 683 Patent is an illustration of the frame of an AC snowmobile available in the courtroom throughout the trial (Exhibit D-65) (transcripts, March 2, 2015, p. 98)

(3) Brian Sturgeon

[254] Brian Sturgeon has been a sales representative for the past 10 years for a company, located in Minneapolis, called David Olson Sales. It sells machine tool equipment. After his graduation from high school, Mr. Sturgeon took some general business and sales courses at the Carlson Business School at the University of Minnesota. From 1987 to 1999, he raced for the Arctic Cat T&S racing team. From 1999 to 2005, he worked for Arctic Cat as the race manager, working with the race organizations, but being also responsible for the budget and liaising with the engineering department. He was responsible for all types of snowmobile racing.

[255] In 1979, he began cross-country racing and did a few snowcross races in the 1980s; he raced both on Arctic Cat and Polaris products as a hobby. In the summer of 1987, he was called by Steve Thorsen who had been hired by Arctic Cat to put together a new factory Arctic Cat race team. Mr. Sturgeon was asked to drive for the T&S race team (named for Steve Thorsen and Dean Schwartzwalter). The T&S team did several forms of racing (snowcross, Ice LeMans, oval racing, drag racing).

[256] Using a series of photographs (Exhibit D-75), he testified about a snowmobile that Mr. Thorsen and Mr. Schwartzwalter built and modified in 1991 for the 1992 season. He stated that 10 such snowmobiles were built. In building the snowmobiles, they took a production bulkhead and tunnel from an Arctic Cat Prowler snowmobile and made changes. He testified that they had had problems with the chassis flexing and added spars to reduce this. The shock mounts (where the shocks connect to the chassis) were changed, the steering post was moved to be more straight up and down (this moved the steering post out of the way but also allowed the driver to be more forward), and the rear suspension was modified. Before the spars were installed, the steering column was held in place by "a tube riding up and then over across the top and coming down each side" where each side of the tube had a "stamped piece of metal that was riveted to the tubes and riveted to the top of the tunnel to support the frame;" the handlebars were then "just bolted on through two holes on the top of that tube". He indicated that there "really isn't any strength added" with the original configuration.

[257] After a race, the top-finishing snowmobiles were subject to a teardown and technical inspection according the ISR rules (the ruling body of snowmobile racing). When a teardown was taking place, "other racers, other mechanics, race managers from any race, you know, any manufacturer, engineers, whomever was involved with the racing" could be present.

[258] Before cross-examination was to commence, the Court moved to an area in the court house where was available the actual snowmobile depicted in Exhibit D-75.

[259] The cross-examination centered on the configuration of a snowmobile racing on oval tracks. There is an offset front suspension; the rider is hanging on the handle bars when taking corners on the track, with the body hanging on the left to counter balance the centrifugal force generated by a snowmobile taking corners at close to 100 miles per hour; the handle bar itself is completely different than regular handle bars such that when the snowmobile is pointing straight, the handle bar will not be. Although the witness stated that the right handle was positioned to control the throttle in a curve (to the left), he had to acknowledge that the left grip is shaped in a completely different fashion, "shaped hanging downward so that (the rider can hang off that (handle))" (transcripts, March 2, 2015, p. 194). Finally, the witness had to concede that the snowmobile presented at Exhibit D-75, which is the vehicle that was inspected, is significantly different from a photograph found in D-77 (at p. 20 of an article published in Snow Week of October 14, 1991) with a single crossbar. Mr. Sturgeon was incapable of identifying the snowmobile on which he raced some 25 years ago.

[260] On the other hand, Mr. Sturgeon continued to assert that the steering assembly was created for the purpose of stiffening up the chassis, with the steering post merely bolted to the structure.

(4) Douglas Wolter

[261] Mr. Wolter has a Bachelor of Science in Industrial Technology degree received in 1985 from the Bemidji State University. He has worked for Arctic Cat for almost 20 years and is currently Director of Engineering Shared Services, where he is responsible for different engineering departments. That includes plastics, styling, prototypes, emissions, noise, vibration, and harshness, as well drafting for both snowmobiles and ATVs. From December 2006 to April

2014, Mr. Wolter was the Director of Snowmobile Engineering. Prior to 2006, he was a product team manager in the ATV division. Mr. Wolter raced snowmobiles from 1990 to 1998 (mostly in the cross-country segment but also in the snowcross segment).

[262] Mr. Wolter testified about the product planning process at Arctic Cat: they plan in the short term for models for the next year or two as well as longer term planning which can involve new platforms or engine series requiring longer development. In his 20 years' experience with Arctic Cat, the company has never employed someone specializing in ergonomics.

[263] Once the decision is taken to make a new snowmobile, a System Design Specification (SDS) is written that sets out what the machine's capabilities have to be. They then begin designing to those requirements using CAD and go through different prototype iterations to test options (usually 3 to 5 built per iteration). They then begin tooling or producing tools to manufacture the parts in mass production. They will then build a "production validation build" (PVB) when it is ready for production and they want to test in a field environment or show it for marketing purposes. One month before production, they will build a pilot version which will go on to the assembly line as a first unit for the assembly workers to have as an aid in putting the snowmobiles together. He was involved in preparing the hard drive containing certain CAD files and printed drawings for this litigation. He testified that it contained "released CAD files or part drawings, it contains released sub-assembly files and it contains layout files for the models that are relevant to this case, which are F3s, F4s, F5s and 2011 -- or 2008 or 2011 race snowmobiles. And it also contains all PDF files that we have produced from these CAD files." He stated that released files were those released for production and could not be modified. There were no CAD files

representing an entire snowmobile. He introduced a CAD example relating to a Firecat release assembly drawing of the front end design that was used from 2002 to 2006 (Exhibit D-98). He testified that the bill of material provides the "ingredients list" to build the snowmobile and is aimed at the assembly process, compared to the illustrated parts manual which is aimed at consumers and dealers.

[264] Mr. Wolter also testified about the Trail Cat snowmobile, which Arctic Cat first produced in 1975. He described it as having "spars that go from the front spindle area and then back down to the tunnel to form spars. […] Above where these spars are, there is a triangulated structure that is fastened to that and that was a lot different and then the steering support was mounted to the top of that triangulated structure." He testified that the snowmobile was sold in this configuration for one year as model year 1975 (Exhibits D-95 and D-96).

[265] In the same vein, he testified about the Sno-Pony snowmobile, which was produced as a production model in the 1970s that could be purchased by the public. He described it as "position[ing] the rider very far forward on the machine compared to others in that time period." The snowmobile also had a unique suspension system with one spring that was perpendicular to the skis. Mr. Wolter introduced photos of the Sno-Pony (Exhibit D-97).

(5) Troy Halvorson

[266] Mr. Halvorson is the Mountain Product Team Manager at Arctic Cat. He has worked for Arctic Cat for 18 years in Thief River Falls, Minnesota. His father worked for Arctic Cat and his brother and his son also work for the company. He has a degree in industrial technology from Cal

Poly. He has experience riding and racing snowmobiles since he was a child, as well as other recreational vehicles (motorcycles, dirt bikes, BMX, bicycle motocross).

[267] In 1999, Mr. Halvorson began working on the development of the ZRs (including the 440 race snowmobile) with a team that included Kirk Hibbert (team manager), Ron Bergman (project engineer), Ken Fredrickson, and Michelle McCraw (technician). He described the team's experience with ergonomics, including himself, as not using specialists but with different members of the team trying things out and seeing what feels good to them. They design snowmobiles so that a wide range of rider sizes will have a good experience on the snowmobile. Mr. Halvorson testified that racing is very important to Arctic Cat in developing and testing products (e.g., when pushing parts to the limit in racing it can show what parts break easily and need to be strengthened). He also explained that, in the development of the ZRs, the weight of the snowmobile and mass centralization on the snowmobile were important, especially in snowcross where there are obstacles to get over and jumps.

[268] In 2003, Mr. Halvorson became the leader of the team developing the new race "sled" for the 2004 model year. From 2005 to present, he has been a team manager for both racing and consumer snowmobiles. In this role he has been involved in promotional events for Arctic Cat including Hay Days and Snow Shoot, where all snowmobile manufacturers present their snowmobiles to the industry media. At these events, he gathers feedback about what customers want. He described Arctic Cat customer as being "very brand loyal" and "bleed[ing] green" based on the Arctic Cat colour.

[269] Mr. Halvorson testified about the process at Arctic Cat for bringing out new racing snowmobiles. The company did so every year except 2007 when there was a change in the snowmobile racing stock class rules from a 440 engine to a 600 engine. There are different types of racing where Arctic Cat snowmobiles have been used, including ice enduros (racing on ice for "a lot" of laps), ice ovals (a smaller race car-type track with ice), hill climb racing (racers need to get to the top of a hill while navigating a series of flags), grass drags (a drag racing strip in a field), ice drags (drag racing on ice), and water cross (racing snowmobiles across water during the summertime), but that snowcross is the most popular form of racing. The 2003 440 Sno Pro was designed specifically for snowcross, and had certain modifications (e.g., a specially-designed footrest so racers feet would not get stuck if they were thrown off, and a seat that made it easier to stand up). Mr. Halvorson stated that motocross was really influential in the development of the 2004 Sno Pro and introduced a media article from 2003 comparing it to a dirt bike (Exhibit D-115). He testified that Arctic Cat purchased a 2003 MXZ REV they used to ride against in the development of the 2004 Sno Pro. He stated that he personally had about 2 hours of riding time on the REV for comparison.

[270] When AC wants to test a competitor snowmobile, it usually purchases them from dealerships. The company also gets information about the competition from the industry media, talking to customers, and on the internet forums.

[271] Mr. Halvorson was aware of the T&S 2005 Mod snowmobile made by Steve Thorsen and Dean Schwartzwalter as he was shown the snowmobile at their facility. He stated that he saw "two down tubes that connected from the upper steering support area down to the front corners of the

front suspension." He presented notes from his meeting with Mr. Thorsen in 2005 (Exhibit D-116). Mr. Halvorson testified that Arctic Cat acted upon this information by creating spars that became part of their 2006 Race Sled and presented the Illustrated Parts Manual for the 2006 Sno Pro (Exhibit D-117).

[272] Mr. Halvorson discussed the F4 project in 2008 that became the ProCross/ProClimb launched in 2012 (Exhibit D-118). He indicated that there was a desire at Arctic Cat to communize the snowmobile platforms to increase efficiency, including using the same engine system (prior to the F4, the performance snowmobiles used the F3 platform and the mountain snowmobiles used the M series platform). Mr. Halvorson testified that Arctic Cat set a series of target costs and weights to strive for in the development of the F4 platform.

[273] During cross-examination, the witness conceded that the rider ergonomics is an important feature of snowmobiles. However, on other issues this witness showed reluctance to concede the obvious. The general impression coming from the testimony was that the witness was attempting to avoid his cross-examination conceding that which would run counter to the case of his employer. For instance, the witness showed reluctance to concede the success experienced by BRP when it launched its REV and that AC was eager to have its own snowmobile to compete. In P-51, a document emanating from AC entitled Introduction 400 Sno Pro 2004, it would appear clear that AC wanted to "announce an early "pre-season" sneak preview for the 2004 race season, with its engineering department working definitely on the 440 Sno Pro in regaining superiority at the race track". The document goes on to boast of "major changes to the rider position, ergonomics, handling…" Still, that same document listed as key improvement a new steering position, chassis

strength improvements and a new seat design. Similarly, it is quite obvious that the steering column as shown in P-51 had been put quite forward in the 2004 model compared to the year before model.

[274] Exhibit P-50, an article introduced by AC's representative Brad Darling, entitled "2004 Arctic Cat SnoPro – New Steering Position", coming from the SnowTech magazine of September 2003, makes the point vividly that AC released information about the 2004 model earlier than usual. The article lists the key improvement that very much corresponds to the list found in P-51. The comparison overlay of the 2003 and 2004 models found in P-51 is also present in the article. Moreover, the article states that AC felt the need to keep racers from jumping brands as the BRP REV chassis was enjoying great success with its rider forward position. As the article notes, "… it only makes sense Arctic Cat would respond with a change in rider ergonomics, making the transition to a standing riding position easier." Asked directly why AC felt the need to introduce the new chassis, Mr. Halvorson was not able to offer much in response.

[275] Somewhat surprisingly, an article in Maximum Sled Worldwide of September 2003 (P-102) which quotes Mr. Halvorson as saying that "I spent a lot of time riding a REV last year" and "I wanted to get to know it and thus incorporate some of its concepts to the SnoPro" is disputed for its accuracy, but quotes from Snow Week that deal with other features are accepted by the witness as being accurate.

[276] On the other hand, Mr. Halvorson was more willing than other witnesses to recognize where the photographs presented as P-57 were taken. These photographs purport to demonstrate a

so-called “tear down” or “tear apart” of a BRP snowmobile. Mr. Halvorson readily accepted that the photographs had been taken in the chassis room on the AC premises.

[277] However, at the end of the day, not much rides on this cross-examination, as the documents spoke for themselves. AC was eager to adjust in view of the reception received by the REV.

[278] As indicated earlier, the evidence of expert witnesses will be reviewed if and when it becomes important in the resolution of issues. Here is a list of those experts:

BRP	**AC**
• Kevin Breen	• Daniel Cowley
• Robert Larson	• Mark Warner
• Christine Raasch	• Devinder Grewal
• Gerard Karpik	• David Karpik
• Keith Ugone *	• Andrew Carter *
• Claude Gélinas *	• Andrew Harrington *

* On the issue of damages

A short introduction about each expert witness will suffice:

Kevin Breen: Together with Robert Larson, he was BRP’s principal witness on infringement and validity of the Patents. He is a mechanical engineer who holds a Master’s of Engineering in Industrial Engineering from the Midwest College of Engineering (1984). He has more than 35 years of professional involvement with recreational vehicles and he is familiar with snowmobiles having worked and riding them;

Robert Larson: Also an expert in Mechanical Engineering, Mr. Larson’s involvement in this case relates to one of his areas of expertise, the measuring of static and dynamic parameters of recreational vehicles, including geometry, center-of-gravity location and moments of inertia. He is a Senior Managing Engineer with Exponent Failure

Analysis Associates. He holds a Master of Science in Mechanical Engineering from the University of Michigan (1989);

Christine Raasch: An associate of Mr. Larson, Ms. Raasch is a Principal at Exponent. After earning her Bachelor of Science degree in Mechanical Engineering at the University of Arizona, she went on to obtain a Master of Science and a Doctor of Philosophy (Ph.D.) in Mechanical Engineering from Stanford University. She completed a post-doctoral fellowship at the Rehabilitation Institute of Chicago and Northwestern University, doing research on the neuromuscular control of human movement. One of her areas of expertise is the biomechanics of human movement. She also works extensively with anthropomorphic test devices (or dummies);

Gerard Karpik: Mr. Karpik has more than 30 years' experience in designing and building snowmobiles. Together with his brother David, who was retained by AC, they designed the Blade snowmobile;

Claude Gélinas: Mr. Gélinas is a Chartered Accountant. He holds a Bachelor of Business Administration from l'École des Hautes Études Commerciales (1981). He has developed an expertise in forensic analysis including defining value in litigation support;

Keith R. Ugone: Mr. Ugone is the Managing Principal at Analysis Group, Inc. He provides economic and financial services to clients, applying economic principles to complex financial issues to clients, applying economic principles to complex financial disputes. He holds a Ph. D. in economics;

Devinder Grewal: Mr. Grewal is a mechanical engineer with a Bachelor's degree from the University of California at Berkeley, a Master of Science degree in Mechanical Engineering from Stanford University and a Ph. D. in Mechanical Engineering from the University of California at Berkeley. Dr. Grewal commented on the reports of Mr. Breen, Mr. Larson and Dr. Raasch on the REV Patents as well as performing some measurements;

Mark Warner: Mr. Warner also offered his expertise on the BRP's Rider Position Patents. He is a mechanical engineer with a Bachelor of Science degree in Manufacturing Engineering and a Master of Science in Mechanical Engineering, both from Brigham Young University. He has expertise in static and dynamic testing of vehicles, and it includes analysing and riding snowmobiles;

Daniel Cowley: Another mechanical engineer, Mr. Cowley holds a degree in Mechanical Engineering from Iowa State University and a Master of Business Administration from the University of Northern Iowa. His

expertise was required by AC on the validity of the pyramidal brace assembly patent (264 Patent). Mr. Cowley spent 30 years working in vehicle design for John Deere: he was the lead engineer for the development of tractor frames;

David Karpik: Mr. David Karpik is, like his brother, an expert in vehicle design. He was retained to discuss the 264 Patent. He is the owner of the Blade Motorsports Group, which sells the Blade snowmobile. He has extensive experience with snowmobiles;

Andrew Carter: Mr. Carter's expertise was called for on the issue of damages. He is the founding member of Ocean Tomo, LLC. Mr. Carter is a Certified Public Accountant licensed in the State of Illinois. He has a Bachelor of Science degree in Chemical Engineering from the Rose-Hulman Institute of Technology and a Master's in Business Administration from the University of Chicago's Graduate School of Business;

Andrew Harrington: As with Mr. Gélinas, Mr. Harrington is a Chartered Professional Accountant. He is a managing Director of Duff & Phelps, in Toronto. Mr. Harrington has expertise in the quantification of loss and accounting of profits in intellectual property litigation disputes.

IV. Construction of the claims

A. *The person of skill in the art (POSITA)*

[279] Since the Patent is addressed to a person skilled in the art, the characteristics of such a person, or group of persons forming a team, must be determined before an examination of the construction of the claims can be undertaken. That is at last something on which the parties were able to agree. Unfortunately, they were not able to agree completely on the characteristics of the POSITA.

[280] There are evidently two types of patents in play in this case. One Patent is concerned with the frame assembly of snowmobiles and all-terrain vehicles (and similar vehicles). The other three

Patents, the so-called radical evolution vehicle (REV) Patents, are concerned with the position of the rider resulting from the new configuration of snowmobiles.

[281] It is reasonable to conclude that the Rider Position Patents would be addressed to the same person skilled in the art, as proposed by Arctic Cat's experts.

[282] The POSITA would need, as proposed by most experts and in particular by Mr. Breen, an understanding of mechanics, dynamics and kinematics. It follows that mechanical engineers would be included in the team that would become the POSITA. The 106, 813 and 964 Patents specifically address the new position a rider would take on a redesigned snowmobile. There is little doubt that the POSITA needs knowledge and experience in snowmobile design, as acknowledged by Mr. Breen for BRP and Mr. Warner for AC. Given that the design of the snowmobile is a function of the new positioning of riders because of the new configuration, Messrs. Warner and Breen would agree that the POSITA has an understanding of human factors or biomechanics.

[283] The 264 Patent is different. It is concerned with the frame assembly for vehicles such as snowmobiles and all-terrain vehicles. Although the disclosure in the Patent is broad enough to include vehicles other than snowmobiles, the claims are limited to the frame assembly of snowmobiles. Mr. Breen did not alter his definition of the POSITA when addressing the 264 Patent. Mr. Cowley, for AC, would be satisfied with a POSITA that does not require experience in snowmobile design, an understanding of the laws of physics being deemed sufficient. That is certainly not the view of another AC expert who does not have formal training but has been designing, or re-designing, recreational vehicles for most of his career. For David Karpik,

knowledge of recreational vehicles, including snowmobiles, is an important feature of the skilled person. It is now clear that it makes a difference whether the expertise required can be general, as suggested by Mr. Cowley, or it needs to have some specificity as proposed by Mr. David Karpik (recreational vehicles) and by Mr. Breen (snowmobiles). Given that the invention seeks to enhance the ruggedness of vehicles that operate across a wide variety of different terrains and under a variety of conditions, but that the claims that fence the monopoly sought are restricted to snowmobiles, I would have thought that the 264 Patent is addressed at persons of skill who must understand the type of vehicle that is to be improved through this invention. It would therefore be appropriate for the POSITA to have experience in the field of snowmobile design, at least; the person of skill will of course have mechanical engineering expertise or the equivalent expertise acquired through many years of experience in the design of snowmobiles.

B. *Common general knowledge*

[284] Having described who the POSITA is, it is now necessary to determine what would have been the common general knowledge of the POSITA.

[285] It goes without saying that it was well known what the essential elements of a snowmobile are: there is a frame, which is the main structural component, the drive train, the engine, skis and the track which is connected to the engine in order for the snowmobile to move. Because of the difficult terrain on which they operate, it was well known that suspensions are an important component. The POSITA knows that snowmobiles have seats of a straddling nature, sideboards of various configurations used by riders to set their feet and steering device connected to the skis.

[286] No doubt the POSITA would have known about “engine cradles” and “tunnels”, terms that were commonly used.

[287] The POSITA knows about the snowmobile using a seat that is of the straddling variety. Those seats are connected in one fashion or another to the frame. The POSITA would know that snowmobiles don’t use rear engines: the rider will have the engine in front of him.

[288] I accept David Karpik’s testimony that the design of most snowmobiles in the 1980’s and 1990’s was quite similar. That would have been common knowledge. The differences were more stylistic than anything else. Indeed, BRP argues that it changed the configuration of conventional snowmobiles with its REV (radical evolution vehicle).

[289] It cannot be disputed either that the POSITA would know about the laws of physics as part as the general knowledge. The concepts of center of gravity (“the point where the weight of an object can be said to be concentrated” , AC’s memorandum of fact and law, Claim Construction, para 44), mass centralization and moment of inertia (how easy to rotate an object about an axis) are not new and would have been well known to mechanical engineers. Thus, experts Breen, Warner and Cowley all agreed that a lower center of gravity would generally be desirable as it makes tipping over less likely and makes the vehicle more stable over bumps. Mass centralization makes it easier to drive the vehicle.

[290] The POSITA would be familiar with chassis rigidity: a lack of rigidity produces torsions, or “flexes”. It would have been known that there are various methods to increase rigidity, from thicker to heavier or stronger material.

[291] Given that the POSITA has experience with the operation of snowmobiles, she is familiar with snowmobile riding, which is of significant importance when designing a new snowmobile. Accordingly, she knows about active riding, requiring for the rider to move about the snowmobiles he is riding. Thus, it would be well-known, as Mr. Fecteau testified, that “riding the tank” (the gas tank is usually situated toward the first half of the snowmobile), which consists of applying the rider’s weight forward, was used in some circumstances. Actually, the POSITA would know that this is consistent with mass centralization. Conversely, the POSITA would know that “riding the tank” is not the usual position as Mr. Wolter noted that he was riding the tank during races. An effort was needed to take that position and maintain it.

[292] The POSITA knows that snowmobiles are equipped with sideboards used for foot rests, with different configurations that allow the feet to move back and forth. I accept Mr. Breen’s evidence that, given the design of snowmobiles in the 1980’s and 1990’s which was similar, the foot rests were in the forward position of the sideboards. That would generate foot rests that “were generally known to include an upwardly angled position for supporting the feet of the rider seating in the “custom-type” position such that the rider would be comfortable” (Expert Report of Kevin Breen, P-39, para 70). That evidently does not mean that the feet would always be in that position. Indeed, when “riding” the tank the feet must, by necessity, be well back from the position they must be in when seated further on the straddling seat. The POSITA must have an understanding of

human factors or biomechanics in designing a new vehicle such as a snowmobile because of the recognition by the witnesses that the position of the rider changes, from ride to ride and during rides, whether that be racing, mountain riding, on trails or during leisurely Sunday afternoon excursions.

C. *Construction of the Patents-in-suit*

[293] With these considerations in mind, the Patents must be interpreted. The rules governing such interpretation are well known and are not in dispute.

[294] First and foremost, claim construction must not be a results-oriented exercise. The Court does not have a view whether the Patents have been infringed or whether they are valid. The idea is to examine the language of the claims in an informed and purposive way, not in an overly technical or literal way. The Supreme Court in *Whirlpool Corp. v Camco Inc.*, 2000 SCC 67, [2000] 2 SCR 1067 [*Whirlpool*], provides an oft-quoted road map to the interpretation of patents. For our purposes, it will suffice to reproduce para 49 of the reasons for judgment:

> As stated, the Federal Court of Appeal applied the "purposive construction" approach to claims construction in *O'Hara*, *supra*, and, with respect, I think it was correct to do so. The appellants' argument that the principle of purposive construction is wrong or applies only to infringement issues must be rejected for a number of reasons:
>
> > (a) While *Catnic*, *supra*, dealt with infringement, the court had first to determine the scope and content of the plaintiff's invention. Lord Diplock was careful to relate his discussion of the "essential" features to the wording of the claims. It was these essential features considered without reference to specific issues of validity or infringement that constituted the "pith and marrow of the claim". He canvassed the possible existence of "any variant" of a "particular

descriptive word or phrase appearing in a claim" but was careful not to link his discussion of claims construction to the particular variant in the defendant's allegedly infringing lintel. Indeed, for emphasis, he italicized the word "any" in "any variant". A patent must not of course be construed with an eye on the allegedly infringing device in respect of infringement or with an eye to the prior art in respect of validity to avoid its effect: *Dableh v. Ontario Hydro*, [1996] 3 F.C. 751 (C.A.), at pp. 773-74. Claims construction cannot be allowed to become a results-oriented interpretation, but there is nothing in Lord Diplock's speech that would support such an erroneous approach.

(b) Acceptance of the appellants' argument could result in a different claims construction for the purpose of validity than for the purpose of infringement (assuming purposeful construction is retained for infringement issues). However, it has always been a fundamental rule of claims construction that the claims receive one and the same interpretation for all purposes.

(c) The orthodox rule is that a patent "must be read by a mind willing to understand, not by a mind desirous of misunderstanding", *per* Chitty J. in *Lister v. Norton Brothers and Co.* (1886), 3 R.P.C. 199 (Ch. D.), at p. 203. A "mind willing to understand" necessarily pays close attention to the purpose and intent of the author.

(d) Rejection of "purposeful construction" would imply the embrace of a purposeless approach that ignores the context and use to which the words are being put. Purposeless construction was rejected by this Court long before *Catnic*, *supra*, as in *Williams v. Box* (1910), 44 S.C.R. 1, *per* Idington J., at p. 10:

> If we would interpret correctly the meaning of any statute or other writing we must understand what those framing it were about, and the purpose it was intended to execute. [Emphasis added.]

(e) In fact, a patent is more than just "other writing". The words of the claims are initially

proposed by the applicant, but they are thereafter negotiated with the Patent Office, and in the end are accepted by the Commissioner of Patents as a correct statement of a monopoly that can properly be derived from the invention disclosed in the specification. When the patent issues, it is an enactment within the definition of "regulation" in s. 2(1) of the *Interpretation Act*, R.S.C., 1985, c. I-21, which says:

> "regulation" includes an order, regulation, rule, rule of court, form, tariff of costs or fees, letters patent, commission, warrant, proclamation, by-law, resolution or other instrument issued, made or established
>
> (a) in the execution of a power conferred by or under the authority of an Act, or
>
> (b) by or under the authority of the Governor in Council; [Emphasis added.]

A patent must therefore be given such interpretation according to s. 12 of the *Interpretation Act* "as best ensures the attainment of its objects". Intention is manifested in words, whose meaning should be respected, but words themselves occur in a context that generally provides clues to their interpretation and a safeguard against their misinterpretation. P.-A. Côté, in *The Interpretation of Legislation in Canada* (3rd ed. 2000), puts the matter succinctly when he writes, at p. 387, "Meaning flows at least partly from context, of which the statute's purpose is an integral element" (emphasis added). To the same effect see *Rizzo & Rizzo Shoes Ltd. (Re)*, [1998] 1 S.C.R. 27, at para. 21. These principles apply to claims construction by virtue of the *Interpretation Act*.

(f) While the appellants express concern that "purposive construction" may open the door to extrinsic evidence of intent, as is the case with certain types of extrinsic evidence in the United States, neither *Catnic*, *supra*, nor *O'Hara*, *supra*, goes outside the four corners of the specification, and both properly limit themselves to the words of the claims interpreted in the context of the specification as a whole.

(g) While “purposive construction” is a label introduced into claims construction by *Catnic*, *supra*, the approach itself is quite consistent, in my view, with what was said by Dickson J. the previous year in *Consolboard*, *supra*, on the topic of claims construction, at pp. 520-21:

> We must look to the whole of the disclosure and the claims to ascertain the nature of the invention and methods of its performance, (*Noranda Mines Limited v. Minerals Separation North American Corporation*, [1950] S.C.R. 36), being neither benevolent nor harsh, but rather seeking a construction which is reasonable and fair to both patentee and public. There is no occasion for being too astute or technical in the matter of objections to either title or specification for, as Duff C.J.C. said, giving the judgment of the Court in *Western Electric Company, Incorporated, and Northern Electric Company v. Baldwin International Radio of Canada*, [1934] S.C.R. 570, at p. 574, "where the language of the specification, upon a reasonable view of it, can be so read as to afford the inventor protection for that which he has actually in good faith invented, the court, as a rule, will endeavour to give effect to that construction".

Not only is “purposive construction” consistent with these well-established principles, it advances Dickson J.'s objective of an interpretation of the patent claims that “is reasonable and fair to both patentee and public”.

(h) The appellants suggest that “purposive construction” undermines the public notice function of the claims, and unfairly handicaps legitimate competition. The trial judge, they say, was able to salvage the '734 patent by narrowing the scope of the word “vane” in the earlier '803 patent by a restrictive “purposive” construction. However, purposive construction is usually criticized by accused infringers for tending to *expand* the written claims. In fact, purposive construction can cut either way. Here it enabled the appellants to escape infringement of the '803 patent. No doubt if the '734 patent had

> never been granted, the appellants would now be strongly advocating a narrow "purposive construction" of the '803 patent, and of course the respondents would just as surely be advocating the contrary position. Purposive construction is capable of expanding or limiting a literal text, as Hayhurst, *supra*, points out at p. 194 in words that anticipate the trial judgment in this case:
>
> > Purposive construction may show that something that might literally be within the scope of the claim was not intended to be covered, so that there can be no infringement…
>
> Similarly, two other experienced practitioners, Carol V. E. Hitchman and Donald H. MacOdrum have concluded that "[a] purposive construction is not necessarily a broader construction than a purely literal one, although it may be" (Hitchman and MacOdrum, "Don't Fence Me In: Infringement in Substance in Patent Actions" (1990), 7 *C.I.P.R.* 167, at p. 202).

I have underlined some passages of para 49 for emphasis as they may be particularly relevant.

[295] The other important case on claim construction is of course the companion case to the *Whirlpool* judgment. In *Free World Trust v Électro Santé Inc.*, 2000 SCC 66, [2000] 2 SCR 1024, the Court was concerned with the extent to which the claims are sufficiently elastic to capture the machine constructed by Électro Santé Inc. As put by Binnie J. for the Court, to what extent does a patent monopoly protect ""the substance" or the "the spirit" of an invention, as distinguished from what is literally described in the written claims… " The Court answered the question by ruling that there cannot be a consideration of the claims by resorting to the spirit of the invention in order to expand its scope. That is because the language of the claims defines the scope of the monopoly

itself. Thus, a balance is struck: "(p)redictability is achieved by tying the patentee to its claims and fairness is achieved by interpreting those claims in an informed and purposive way" (para 43).

[296] If the language of the claims is clear and unambiguous there would not be a need to resort to the disclosure to construct the claims. If recourse to the disclosure is needed, as is often the case, it will provide context. But the construction of the claims is limited to using the patents. As found in *Whirlpool*, "…neither *Catnic*, *supra*, nor *O'Hara*, *supra*, goes outside the four corners of the specification, and both properly limit themselves to the words of the claims interpreted in the context of the specification as a whole." (para 49(f)).

[297] That takes us to the construction of the two sets of patents, one concerned with the configuration of a "new" snowmobile (the 106, 813 and 964 Patents) and one concerned with the frame construction (264 Patent).

[298] The mind willing to understand will be open to the purpose and intent disclosed by the patents. I was struck at trial by some attempts that were made by some of the expert witnesses to favour a reading of the patents that would lead to a construction of some of the essential elements that can only be described as defying any common understanding of language.

[299] It may be worth repeating that claim construction is a question of law. As such, it is a question for the Court that will receive the assistance of experts for the purpose of ascertaining how those skilled in the art would construe the patent. But I wish to stress that common sense is not excluded from the Court room. The expert assists the Court in order to put the trial judge in a

position to interpret the patents and their claims in a knowledgeable way. I repeat. Claim construction precedes the examination of possible infringements and the validity of claims. The use of experts is not enhanced when their interpretation is tainted by some pre-ordained outcome.

[300] There are a number of terms that require an interpretation. They are seen as being essential to the Patents. I will start with the terms that are common to the Rider Position Patents.

(1) Rider Position Patents

[301] The 106, 813 and 964 Patents all share the same first sentence: “The present invention concerns the overall design and construction of a snowmobile”. The snowmobile is to be improved such that the position of the rider will be different. The three Patents also share the first sentence under Summary of the Invention: “The present invention improves upon the conventional design by repositioning the rider on the vehicle and redesigning the layout of the vehicle to minimize the effect of the vehicle’s movement on the rider as they pass over uneven terrain”. One may therefore expect the Patents to explain how the new snowmobile is designed and constructed.

[302] However, as already indicated, the three Patents do not proceed to describe the design and construction of a new snowmobile; instead we are presented with various measurements. The claims provide different ranges for those measurements. In that context, a number of terms have been identified as requiring an interpretation.

(a) *"snowmobile"*

[303] In this case, the term is found in the three Patents under review. It must be construed identically.

[304] AC took the view that nothing in the Patents limits the snowmobile to a type or class of snowmobiles. As its expert Warner contended, it is merely a vehicle using an engine to travel on snow and ice. Thus, a children's snowmobile would be a snowmobile.

[305] On the contrary, BRP examines the three Patents and argues that the figures found in Patents 106, 813 and 964 all show a standard snowmobile, thereby excluding children's snowmobiles which have by nature special and different features. The most significant information coming from these Patents is the use of the 50^{th}-percentile human male rider to determine the new position of the rider once a snowmobile has been reconfigured. It stands to reason that the measurements used of an adult can only be in relation to the snowmobile to be used by an adult. BRP argues that the figures of the Patents show unmistakably that the Patents are concerned with snowmobiles that are driven by adults.

[306] The Court has received evidence of an adult riding a children's snowmobile. That is certainly possible. However, is that the type of vehicle these Patents are concerned with? When read in context, both the disclosure and the claims with the figures point to the snowmobile being constructed for adults. It appears beyond any doubt that the measurements in the three Patents can only have any meaning if considered with respect to a snowmobile constructed according to adult

measurements. I cannot see how a POSITA could include the children's snowmobile, as a part of the snowmobiles those Patents are concerned with when constructed according to the size requirements of children.

[307] The figures associated with these Patents are all of adult proportions starting with figure 1 which is presented as a conventional snowmobile. Figure 1 of the 106 and 813 Patents is even referred to as a particular BRP model (page 7). The Patents show a departure from the riding position of the conventional snowmobile.

[308] Similarly, the snowmobile that is displayed in these Patents is not one where rider and passenger are side-by-side, or one with more than one track. There is no cabin displayed in any of the figures in these Patents or even alluded to in the specifications. To put it bluntly, it is rather obvious that there is a particular type of snowmobile that is concerned with these Patents. As with other types of recreational vehicles, size matters. The youth snowmobile models are not suited for adults even if an adult can ride one occasionally because it will not be comfortable; they are not meant for them. The BRP Patents claim to reconfigure a different snowmobile. A purposive construction, as required, leads to one construction. Manifestly, the inventor is interested in the new configuration of the conventional snowmobile. The disclosure says that much. The use of the 50^{th}-percentile male is another indication that the proposed re-design is directed at a snowmobile built to accommodate an adult comfortably. Finally, the advantages touted for the new configuration would appear to be concerning the conventional snowmobile.

[309] The view put forth by Mr. Cowley, for AC, must be seriously discounted. He contended, without much to support the construction, that all types of snowmobiles are included for the purpose of these Patents. It is only if one ignores the language of the claims and does now allow a purposive construction that it is possible to suggest a definition of "snowmobile" that could be as broad as that proposed by Mr. Cowley. The integrity of the claims is not accounted for. As already noted, as part of para 49 of *Whirlpool*, citing approvingly *Consolboard Inc. v MacMillan Bloedel (Sask.) Ltd.*, [1981] 1 SCR 504 at pp 520 [*Consolboard*], "(w)e must look to the whole of the disclosure and the claims to ascertain the nature of the invention and methods of its performance…being neither benevolent nor harsh, but rather seeking a construction which is reasonable and fair to both patentee and public". Here, the snowmobile in question is what a POSITA would easily recognize as a conventional snowmobile that BRP sought to reconfigure, not some miniature or special purpose snowmobile.

(b) *straddle seat disposed on the tunnel*

[310] AC argues that the seat must be mounted directly on the tunnel in order to be disposed on it. It must be attached directly to the tunnel. As I understand the position, AC would have it that the expression "disposed on" must mean that there is nothing between the tunnel and the seat. I find myself unable to agree.

[311] The *Concise Oxford Dictionary*, 9th ed, defines tunnel as "an artificial underground passage through a hill or under a road or river, etc., esp. for a railway or road to pass through, or in a mine… 4 a tube containing a propeller shaft etc.". The evidence of expert Breen, for BRP, is compelling. There has to be a structure rigid enough to be part of the frame that will have to

support a number of components, including the seat (and, of course, the person(s) sitting on it) and the drive track for the propulsion of the snowmobile. If there is not structure, there is no tunnel. It appears reasonable that the POSITA, who would be familiar with snowmobiles, would understand that the tunnel is generally made of bent metal sheets and that is what was intended by the inventor. That would not suggest that every snowmobile must have a tunnel. It is rather that these Patents require a tunnel.

[312] The tunnel on a snowmobile is a structure; it is above the drive track which is running in order to move the snowmobile as it is operationally connected to the engine. Something that would provide the capacity to support a number of components does not become a tunnel simply because it assumes a similar function. If there is no structure, there is no tunnel. Hence, contrary to what was offered by Mr. Cowley, bicycles and ATVs do not have tunnels. Indeed, he was at a loss to show where they may be situated on these vehicles. It is not because a tunnel on a snowmobile is part of the frame and it supports the seat and other components that what supports components of another vehicle becomes a tunnel. It may perform a similar function, but a tunnel it is not.

[313] The notion of a straddle seat is not controverted. Rather the difficulty stems from the use of the words “disposed on”. Those are in fact used numerous times in the claims. For instance, the “engine is disposed on the frame”, “two skis are disposed on the frame”, “a steering device disposed on the frame” as is the “straddle seat disposed on the tunnel”. As already seen, context counts when constructing claims. I cannot see how the use of the words “disposed on” can entail the requirement of a direct connection between the seat and the tunnel. The seat only needs to be disposed on the tunnel where one considers the context in which the same words are used

elsewhere. That requires no more of a direct connection, without any other intermediate structure in between, as does the requirement that there be "two skis disposed on a frame". In that case, the specification teaches that "(s)kis 116 are connected to frame 114 through suspension system 118 attached to frame 114 and its forward end" (106 Patent, page 9). As can be readily seen, the "two skis disposed on the frame" are in fact connected to the frame through the suspension system.

[314] Furthermore, it would appear that the claims are explicit as to connections when necessary. The drive track which is "disposed below the tunnel" is also "being operatively connected to the engine for propulsion of the snowmobile".

[315] In my estimation, the evidence clearly favours giving the words "straddle seat disposed on the tunnel" what appears to be its natural meaning, that is that the seat must be above the tunnel which is part of the frame and will support the weight of the drivers. The straddle seat is not floating above the tunnel, it is not beside the tunnel, but it is on the tunnel. There is nothing that prevents some structure, or material, to be between the seat and the tunnel.

(c) *standard rider having dimension and weight of a 50th-percentile human male*

[316] That term is found in all claims.

[317] The Patents state that they are concerned with a new overall design and construction of a snowmobile. By changing the configuration of a snowmobile, the rider will be positioned differently. As the 106 Patent posits, "a need has arisen for a snowmobile where the rider's

position is improved to minimize the effect of the vehicle's movement on the rider as it passes over uneven terrain." (page 1). As the rider sat some distance behind the center of gravity of the conventional snowmobile, the new configuration would seek to bring the rider forward. The 106 and 813 Patents, which have very similar disclosure, provide a number of measurements using a rider in order to describe the "new" position. It would be obvious to the POSITA that measurements, in order to be of any utility, would need to be taken from a particular type of individual, given the variety of human beings. Furthermore, such individual must be in a position that would be prescribed. He cannot be standing, or crouching, "riding the tank".

[318] That is why the 106 and 813 Patents speak of "a 50th-percentile United States human male…placing him on the snowmobile in the biomechanically neutral position shown in the Figures (i.e. that approximate the position of a rider a few seconds after starting the vehicle heading straight ahead on flat terrain…" (page 9). The same 50th-percentile American male is used in the 964 Patent.

[319] AC insisted that a snowmobile is to be driven by a human being, not a "dummy" (an anthropomorphic test device or ATD). That is stating the obvious. The point is rather that more standard dimensions of a rider are needed in order to define the "new" configuration of a snowmobile. Dr. Grewal, an expert produced by AC, asserted that there is no real standard rider because, after all, there are many different people who ride snowmobiles. Very true. But, again, that is not what the Patents are claiming. The point is that there must be a reference to which one would resort in order to take measurements in accordance with the many asserted claims. It is hard

to imagine that the POSITA would not be more than familiar with the 50th-percentile American human male.

[320] The three Patents present the same figures (Figures 19 and 20 in the 106 and 813 Patents, and Figures 6 and 7 in the 964 Patent). There cannot be any doubt that these figures do not present accurate dimensions. There is evidently a measure of sloppiness in the presentation of these figures, especially so that the errors are so obvious, even to the uninformed. These errors were never clearly explained by Jonathan Cutler, the lead counsel and patent agent for BRP. AC stressed that there are probably more errors than there are correct measurements. Indeed, the whole prosecution of these Patents, presented at some length, discloses a lack of attention to fundamental details. However, contrary to what was asserted by expert Warner for AC, such obvious errors would not take astray the POSITA who would have readily and easily noticed the numerous and obvious errors. In fact, what the Patents insist on is that a 50th-percentile American man is used for the measurement of distances and angles in the asserted claims. I accept the testimony of Mr. Breen, for BRP, that, although unfortunate, those mistakes would not pose a particular challenge to the POSITA who has more than a passing familiarity with the notion of percentiles corresponding with various characteristics of human beings.

[321] AC recognizes, rightly in my view, that the person skilled in the art would seek to supplement his knowledge, having noted without much trouble, the numerous mistakes in the figures presented in the Patents. There are numerous sources of information that relate to the 50th-percentile; the evidence of Peter Watson and Dr. Raasch, for BRP, shows that the variations over the last decades have not been significant.

[322] As already pointed out in *Whirlpool*, the patent is not to be read by a mind desirous of misunderstanding (para 49(c)). As Binnie J. states, "(a)" mind willing to understand" necessarily pays close attention to the purpose and intent of the author." (para 49) The mind willing to understand, who happens to be the POSITA, would locate without much difficulty a substitute for the obviously mistaken dimensions of the figures found in the Patents.

[323] There was an issue raised about the so-called "biomechanically neutral position". This is a term that came very late in the long process referred to as the prosecution of the 106 and 813 Patents. The examiner at the Canadian Intellectual Property Office showed some reluctance throughout the process. In an effort to convince the examiner in February 2006 (the 106 Patent had been filed since December 1999 and the request for examination came only on August 8, 2003, as per P-24) who was raising again his discomfort with the seat and foot positions as not being definite (P-24, tab 14), Mr. Cutler sought an interview with the examiner in Gatineau (transcripts, February 12, 2015, pp.230 et al.). As had been done with the U.S. Examiner of the U.S Patent office, a prior art snowmobile and the reconfigured snowmobile (which by then had sold for 3 years) were brought. It is then, in February 2006, that Peter Watson suggested the term (transcripts, February 12, 2006 at p. 235). Be that as it may, it does not matter how, and when, the term was introduced. Indeed, whether or not the term was new does not change the need to give it meaning.

[324] Again, one should not lose sight of the requirement that the patent be given a purposeful construction. These are not merely words on a page. *Whirlpool* comes to the assistance and is instructive:

> …
>
> (e) In fact, a patent is more than just "other writing". The words of the claims are initially proposed by the applicant, but they are thereafter negotiated with the Patent Office, and in the end are accepted by the Commissioner of Patents as a correct statement of a monopoly that can properly be derived from the invention disclosed in the specification. When the patent issues, it is an enactment within the definition of "regulation" in s. 2(1) of the *Interpretation Act*…
>
> A patent must therefore be given such interpretation according to s. 12 of the *Interpretation Act* "as best ensures the attainment of its objects"…
>
> (Para 49)

[325] The Patents are simply saying what the position of the rider is when measurements are to be taken to ascertain what the configuration of the snowmobile will be. The weight of the evidence favours that the expression "biomechanically neutral position" was not well known, yet it must be construed. Fortunately, the expression is defined in the 106 and 813 Patents:

> As would be known to a person skilled in the art, a biomechanically neutral position is one wherein each of the opposing muscles of the major supporting muscle groups that maintain the rider in his position are in equilibrium. This point may vary from rider to rider, given changes in height and weight from one rider to another. In cases of difficulty, it may be determined by taking a 50-percentile United States human male (having weight of 78 kilograms and dimensions shown in FIGS. 19 and 20), placing him on the snowmobile in the biologically neutral position shown in the Figures (i.e., that approximate the position of a rider a few seconds after starting the vehicle, heading straight ahead on a flat terrain), and drawing a line from his shoulder through his hip. (For purposes of this discussion, a standard person is illustrated in FIGS. 19 and 20). The intersection of that line with the seat may be considered to be the seat position 130.
>
> (Pages 9 and 9 a)

[326] When considered together with the figures in the Patents, the meaning of "mechanically neutral position" emerges without much difficulty. The Patents are describing a neutral position once the seating position is assumed, with the hands on the handlebars, without exertion. The snowmobile has just started and it is going on a straight line, without turning the snowmobile or making an effort while climbing a hill for instance. The three Patents show, quite clearly in my view, what could be described as a normal position while seated on a snowmobile. Contrary to what was offered by expert Warner, for AC, the rider could not be lying face up or down and be in a biomechanically neutral position as defined. Not only does that ignore the purposeful construction of the Patent, which addresses the position taken by the rider, but it ignores the figures which one finds in the Patents in issue. That is the antithesis of the purposeful construction of claims.

[327] The concept, once defined in the Patents and considered with the figures, is neither vague nor ambiguous. In truth, it is rather simple, especially when we consider the purpose for which it is used. It describes and defines a balanced posture on a snowmobile. The mind willing to understand has no difficulty seeing that "(t)he biomechanically neutral position refers to a standard rider who is not exerting any significant muscular effort, limb extension, crouch or cocked orientation to achieve the body position" (Expert Report of Kevin Breen, P-39, para 123).

[328] I fail to see any difficulty with the "standard position" of the 106 and 813 Patents. Surprisingly, AC argues that there is no clear definition of "standard position". I would have to disagree given that the first claim of the 106 Patent speaks of "a standard position defined as the standard rider straddling and being seated in a biomechanically neutral position on the seat with its

feet disposed on the foot rests in the footrest position and its hands disposed on the steering device on the steering position with the snowmobile being steered straight on flat terrain…" Similarly, the 964 Patent defines the standard position.

(d) *footrests having a footrest position*

[329] AC sees the term as being vague and ambiguous. That is in spite of the fact a POSITA would be familiar with sideboards, on both sides of the snowmobile, used as footrests.

[330] The context in which the terms are found is as one of the elements comprised in a snowmobile, as found in independent claims of these Patents:

> A pair of footrests, one footrest being disposed below each side of the seat, each footrest being dimensioned and arranged with respect to the seat and the steering device to support one of the standard rider's feet there on, the footrests having a footrest position;

[331] AC seems to assume that the feet may go in different places as the rider's feet move routinely forward and backward during normal riding.

[332] As for "footrest position", it is defined at p. 10 of the 106 and 813 Patents:

> The rider's feet 146 rest on footrests 134 in footrest position 138 just behind the center of gravity 144 of the snowmobile 144. The footrest position 138 is the location of the arch of the foot of the rider 126 when his feet are placed in normal operating position on the vehicle. Under normal operating conditions, the rider's feet 146 will rest on a forward portion of the sideboards. Preferably, toeholds 145 are disposed above these forward portion and permit the rider to releasably secure himself to the vehicle.

That definition is clear. In normal operating conditions, the feet will rest on the forward portion of the sideboards. The normal operating conditions, in the context of these Patents, have to be when the rider is seated on the snowmobile. Once again, the purpose of the Patents is to define the configuration of a snowmobile. To satisfy that purpose, the inventor has chosen to sit the rider, the 50th- percentile North American male, in a seated position taking a natural posture as if riding the snowmobile being steered straight. It does not matter that a rider would typically move position during a ride or in different circumstances like mountain climbing. That would exclude when the rider chooses to stand up or operate the vehicle with one knee on the straddle seat. Similarly, there is nothing ambiguous, in my view, in the definition given in the 964 Patent, at page 9:

> Footrests 134 are disposed on both sides of the seat 128 and may be formed integrally with or be supported by the tunnel 119 of the frame 114. In the embodiment illustrated in FIG. 5, the footrests 134 are integrally formed with the tunnel 119 such that the tunnel 119 provides the structural support for the rider's feet 146. The rider's feet 146 rest on footrests 134 in footrest position 138 just behind the center of gravity 144 of the vehicle 110. The footrest position 138 is in the location of the arch of the foot of the rider 126 when his feet are placed in the standard position on the vehicle. Under normal operating conditions, the rider's feet 146 will rest on a forward portion of the sideboards/footrests 134. This foot positioning places the rider's ankles 139, which are defined by the ankle joint, 9 cm above the footrest position 138.

(e) *steering device having a steering position*

[333] I share the view of expert Warner that the steering device is, on a snowmobile, the handlebar. However, we have to part company when he professes that the terms generate confusion.

[334] Once again, it is important to put the words in their context. Claim one of the 106 Patent provides for a snowmobile comprising:

> A steering device disposed on the frame forward of the seat, the steering device being operatively connected to the two skis for steering the snowmobile, the steering device having a steering position;

The professed confusion would come from a sentence at page 4 of the 106 Patent that defines "position". "The seat defines a seat position, the steering device defines a steering position, and the footrests define the footrest position". The suggestion that the POSITA would interpret those words to mean the mechanical component, or the handlebar itself, that is somewhat mystifying.

[335] The sentence taken from page 4 is rather clear: Where the seat, the steering device and the footrests are located will define the position. The position is defined by where the object (seat, steering device, footrests) is located. The location defined by where the handlebars are located does not change. The steering position is not the steering device but is rather defined by it.

[336] The 106 Patent provides more details, consistent with what is found at page 4:

> In case of difficulty, the steering position 136 may be determined by placing the hands of the same 50-percentile rider described above, placing it on the steering device 132 in normal operating position. The steering position 136 will be the intersection of the center of the palm of the hands of the rider 126 and the steering device 132.

As can be seen, position and device are not one and the same. But one defines the other when referring to the 50th-percentile American male using the snowmobile in normal operating position. The POSITA will know what the normal operating position is.

(f) *seat position or seating position*

[337] It is worth repeating again that the Patents seek to construct a "new" snowmobile. In the words of the three Patents, "(t)he present intervention concerns the overall design and construction of a snowmobile". The position of the rider, being a standard rider in a standard position, will be determined by the construction of the snowmobile and the arrangement of its various components, such that the standard position will be taken when in a seating position.

[338] It is in that context that the 106 and 813 Patents and the 964 Patent refer to a "seat position" and "seating position". In the case of the 106 and 813 Patents, the new position assumed by the standard rider is defined on the basis of various distances or angles. A rider "normally" seated on the reconfigured snowmobile would allegedly satisfy those measurements. The seat position is, in my view, clearly defined in the 106 and 813 Patents:

> Seat position 130 is the point at which the weight of the rider 126 is exerted on the seat 128 while seated in a biomechanically neutral position on the seat with its feet disposed on the footrest at the footrest position and its hands disposed on the steering device at the steering position… and drawing line a from his shoulder through his hip. (…) The intersection of that line with the seat may be considered to be the seat position 130. It will also be understood that seat 128 will be covered with an amount of foam or similar padding-type material, and the amount of that foam will vary from seat to seat. Then the rider 126 sits upon the seat 128, his weight will cause the foam to compress and he will sing into the seat 128. Preferably, the seating position 130 is determined after this compression has occurred.

[339] What is noteworthy is that the Patents assume some lack of precision. Preferably, not mandatorily, the measurements are taken after compression of the seat is completed. Moreover, the amount of padding will vary. The precision argued for by AC is in all likelihood not what the

Patents are representing. There is a range of distances and angles that are asserted. Much was made of the exact point where the hip or the shoulder would be used to draw a line between shoulder and hip. A person skilled in the art would not find much difficulty in ascertaining where the hip and shoulder points are located, with a measure of variance, as appears to be allowed in the Patents. The real question may be rather how the invention can be practiced with the sole assistance of these measurements. But, in my view, this is not a matter of claim construction. The claims may be constructed.

[340] The 964 Patent is concerned with the position of the knees, ankles and hips of the rider of the reconfigured snowmobile. Contrary to the position on the then conventional configuration of snowmobiles, the knees are disposed in front of the ankles and below the hips. It is not overly surprising that the Patent would define the seat position to deal with the particular issue:

> When rider 126 is on snowmobile 110, the rider will be positioned on seat 128 so that he occupies seat position 130. Seat position 130 is the point at which the weight of the rider 126 is exerted on the seat 128, and is generally disposed 9 cm below the hips 131 of the rider 126. It will also be understood that seat 128 will be covered with an amount of foam or similar padding-type material, and that the amount of that foam will vary from seat to seat. When the rider 126 sits upon the seat 128, his weight will cause the foam to compress and he will sink into the seat 128. Preferably, the seating position 130 and hip 131 location is determined after this compression has occurred.
>
> (Page 8)

The main concern expressed by AC has to do with the lack of complete precision. When considering the figures of the 964 Patent together with the definition, it would hardly be overly arduous for the skilled person to situate a reasonable point identifying shoulder and hip.

(2) Frame Construction Patent (the 264 Patent)

[341] The 264 Patent is of a completely different ilk. Although it was to be deployed on the REV to increase the rigidity of the frame, as pointed out at page 1 of the Patent, "the present invention concerns the construction of a frame and related structural elements that enhance the ruggedness and ability of such vehicles to operate across wide variety of different terrains and under a wide variety of conditions". It also said that the new frame facilitates the construction of vehicles with an improved rider positioning. The new structure connected to the frame became known as the "pyramidal brace assembly". If the disclosure speaks of snowmobiles and other recreational vehicles, the claims are addressed only to snowmobiles.

[342] A number of terms found in the 264 Patent require that they be interpreted. The meaning given to the term "snowmobile" as presented in the other three Patents will be the same in the 264 Patent. The same is of course true of the "straddle seat disposed on the tunnel".

(a) *engine cradle forward of the tunnel*

[343] The engine cradle, which is not found in the other three Patents, is an essential element of the frame construction of the snowmobile with the new pyramidal brace assembly. As is evident, the engine cradle is located in front of the tunnel. It is an engine cradle of a particular variety that is the essential element of the claims of an invention that adds rigidity to a snowmobile frame.

[344] It does not appear that there is controversy around the nature of an "engine cradle". It houses the engine. However, it is less clear from the testimony of experts whether or not walls are

required to have a cradle. Expert Breen, for BRP, speaks of a compartment to receive the engine which could be a structure delimitated by solid walls or an open structure. Expert Cowley, for AC, would appear to favour a more limited definition of engine cradle in his report of October 26, 2014 (D-82): it includes a bottom and side walls (para 93). In his rebuttal report, Mr. Cowley expands on his explanation noting that the 264 Patent, when it refers to the engine cradle of the invention, always includes walls as well as a bottom.

[345] What makes the explanation more dubious is that, in the same D-82, Mr. Cowley departs from his definition requiring walls when he describes the Blade's engine cradle. Although he finds walls at the back and the front of the cradle, there does not seem to be side walls as he writes, at para 199 of D-82, that "(t)he sides of the engine cradle are formed by the front tube and lower tube on the left and right side of the engine".

[346] What the Court is concerned with, first and foremost, is the meaning being given by the 264 Patent to "engine cradle" as used in the Patent. When considering the meaning to be given to the term "snowmobile", the Court was focused on the inventors' purpose, their intention. That is why the snowmobile under consideration is likely to be an adult-size snowmobile. The same reasoning applies to the engine cradle required by the 264 Patent. The invention adds rigidity to the frame as it passes loads through the structure and frame. The engine cradle is an integral part of the frame assembly. It is said that the invention provides "a frame assembly with a tunnel, an engine cradle disposed forward of the tunnel and connected thereto, and sub-frame disposed forward of the engine cradle and connected thereto" (para 0011). The cradle is obviously much more than an area reserved to position the motor. Actually, the upper column extends upwardly

from the engine cradle to connect with the forward support assembly. When considered in its entirety, including the figures, the cradle has always walls, more or less complete. They never refer to, or even suggest, an open structure. It is a compartment connected to the tunnel and the sub-frame, with walls and a bottom. Some of the passages taken from the disclosure serve as a further illustration that the Patent contemplates the engine cradle to be a compartment, not an open structure:

- [0064] Figure 4 also shows that engine cradle 56 is connected to tunnel 54 by any suitable means known to those skilled in the art. For example, engine cradle 56 may be welded or bolted to tunnel 54. Engine cradle includes a bottom plate 66 and left and right side walls 68, 70, which are provided with left and right openings 72, 74, respectively. Left opening 72 is provided so that the shafts for the transmission (typically a continuously variable transmission or CVT) may extent outwardly from left wall 68. …

- [0065] As Figure 4 illustrates, left side wall 68 is provided with a beam 76 that is removably connected thereto. Beam 76 may be removed during servicing, for example, to facilitate access to the engine components and peripheral elements disposed within left opening 72.

- [0078] Left side plate 162 extends forwardly beyond the front portion 170 of tunnel 86 to form a left engine cradle wall 172. Similarly, right side plate 164 extends forwardly of front end 170 of tunnel 86 to form right engine cradle wall 174. At the lower edge of left and right engine cradle walls 172, 174, there are laterally extending portions 176, 178, which serve to strengthen left and right engine cradle walls 172, 174. …

- [0079] Left engine cradle wall 172 preferably includes an opening 182 therethrough. Opening 182 permits the shafts from transmission 106 to pass therethrough. Unlike left engine cradle wall 172, right engine cradle wall 174 does not include such an opening. Instead, right engine cradle wall 174 is essentially solid. Due to its construction, right engine cradle wall 174 reflects radiant heat from engine 104 back to engine 104 to assist in minimizing heat dissipation from engine 104. Left and right openings 184, 186 are provided through left and right engine cradle walls 172, 174 so that a drive shaft 188 may pass therethrough. Drive shaft 186 connects to endless track

102 for propulsion of snowmobile 22. Opening 182 may include a member 189 about its periphery, also as illustrated in Figures 11 and 12, that provides clearance for the engine. Left engine cradle wall 172 also includes an opening 192 above opening 184 through which a shaft passes for part of transmission 106.

- [0091] Figure 19 is a perspective illustration of the embodiment of the present invention shown in Figures 13 and 14 to assist in understanding the scope and content of the present invention. As illustrated, drive shaft 322 extends through left opening 182 in left engine cradle wall 172. A portion of gearbox 324 is also visible. In addition, left shock absorber 326, which is connected between cross-member 142 and left support arm 216, is illustrated. Right shock absorber, which extends between cross-member 142 and right support arm 218 is visible in Figure 20. Furthermore, left forward foot wall 330 is shown at the forward end of left foot rest 166. A similar forward foot wall may be provided on the right side of snowmobile 22 (but is not illustrated herein).

- [00104] As illustrated in Figure 28, left brace 122 and right brace 124 extend upwardly from tunnel 370 to apex 372 where they connect to variable geometry steering bracket 374. Upper column 118 extends from left engine cradle wall 376 and right engine cradle wall 174 and also connects to variable geometry steering bracket 374. Forward support assembly 134 extends from sub-frame 294 to variable geometry steering bracket 374.

- [00106] This embodiment of the frame assembly of the present invention differs from the previous embodiments in a few respects. First, left engine cradle wall 393 includes a C-shaped opening 392 instead of opening 182. C-shaped opening 392 facilitates maintenance of an engine (not shown) in engine cradle 394. …

- [00112] In addition, the creation of frame assembly 84, 190, 191 has at least one further advantage in that the frame can be made lighter and stronger than prior art frame assemblies (such as frame assembly 52, which is illustrated in Figure 4). In the conventional snowmobile, frame assembly 52 included a tunnel 54 and an engine cradle 56 that were riveted together. Because frame assembly 84, 190, 191 adds strength and rigidity to the overall construction and absorbs and redistributes many of the forces encountered by the frame of the vehicle, the panels that make up the tunnel 86 and the

> engine cradle 88 need not be as strong or as thick as was required for the construction of frame assembly 52.
>
> [My emphasis]

[347] Mr. Breen may well have been right when he wrote at para 147 of his first report, P-39 that "(t)he cradle could be a structure delimited by solid walls, or alternatively an open structure". The difficulty is that there cannot be found that alternative in the 264 Patent. There is simply no embodiment where walls can be eliminated: the walls are complete and incomplete, they are solid and they may have openings. But these are walls. One does not find any signal from the Patent that the alternative is under consideration. On the evidence in this case, the engine cradle considered by the Patent is of a variety that includes walls. There is no evidence to the contrary. Every indication is to that effect.

[348] The evidence appears clear that the inventors meant for their invention to have a walled engine cradle in which the engine can be disposed (para 0015). The engine cradle is an essential element in a Patent, the purpose of which is to add ruggedness and rigidity. Is included in the frame assembly a tunnel, an engine cradle connected to the tunnel and a sub-frame. The cradle is not meant to be an area, but a solid structure.

[349] Justice Louis Pratte of the Federal Court of Appeal reminded us of the limited role of courts in claim construction:

> A court must interpret the claims: it cannot redraft them. When an inventor has clearly stated in the claims that he considered a requirement as essential to his invention, a court cannot decide otherwise for the sole reason that he was mistaken.

> *Eli Lilly & Co. v O'Hara Manufacturing Ltd. (1989)*, 26 CPR (3d) 1, at p. 7

The same idea was expressed in *Free World Trust* as "if the inventor has misspoken or otherwise created an unnecessary or troublesome limitation in the claims, it is a self-inflicted wound."

[350] In my view, the inventors have not misspoken. They meant for a walled, robust engine cradle to be part of the more rigid frame which is the purpose of the Patent. I am convinced that the inclusion of a walled engine cradle was not done *per incuriam*.

(b) *"sub-frame"; "sub-frame forward of the engine cradle"; "a frame including a sub-frame at the front of an engine cradle"*

[351] The 264 Patent is about the construction of a frame that will enhance the ruggedness of the snowmobile, thus allowing it to operate across widely varied terrains. The sub-frame would appear to be one of the components of a frame assembly: it is a structure. As para [0011] states, it is "an object of the present invention to provide a frame assembly with a tunnel, an engine cradle disposed forward of the tunnel and connected thereto, and a sub-frame disposed forward of the engine cradle and connected thereto." Both experts Cowley and Breen agree that the sub-frame receives the suspension.

(c) *"upper column extending upwardly from the frame"*

[352] The upper column is part of the frame assembly. It is how it is presented at para [0027] of the 264 Patent. It is a structure that supports the handlebar (para [0066]). It is "generally an inverted u-shaped structure".

[353] The parties agree that the upper column's purpose is to reinforce the brace assembly. It provides structural support at the apex, thus assisting in holding the whole pyramidal frame assembly to the frame of the snowmobile. The nature of the upper column as a structural element meant to reinforce the pyramidal frame is made abundantly clear with the mention at para [0071] that, "(i)f necessary, upper column 118 may be reinforced with a cross-member 120, but this is not needed to practice the present invention."

(d) *"pyramidal brace assembly"*

[354] No direct assistance is to be found in construing this term in the disclosure of the 264 Patent. On the other hand, the term is used frequently in the claims (Claims 1 to 6, 8, 16 to 21 and 23). It is really at the heart of the claimed invention. Nevertheless, the disclosure will be of assistance in that it discusses "frame-assembly", "pyramidal construction" and "pyramidal structure".

[355] The 264 Patent is all about the construction of a frame to enhance the ruggedness of a snowmobile and the ability of such vehicles to operate on difficult terrains. Thus, an object of the Patent is to provide a frame assembly with a tunnel, engine cradle and sub-frame (para [0011]). It

will have an upper column in some claims as well as a rear brace assembly and a forward support assembly. The rear brace assembly and the forward support assembly are attached to the tunnel, engine cradle and sub-frame, and together with the upper column where appropriate, they connect at an apex (para [0012]). The forward support assembly and the rear brace assembly, converging at an apex, with the upper column, form a pyramidal construction (para [0012]). It would not appear to be difficult to conclude that the frame assembly claimed by the invention would look like a pyramid.

[356] The triangular surfaces converge to the top, the apex. The legs of the structure, the forward support assembly and the rear brace assembly, help form the triangles that would be of the shape of a pyramid. I have no difficulty in accepting that the structure provides structural support and rigidity. The figures unmistakably show the pyramidal structure. Although it is true that the Patent does not offer any dimension for the pyramidal structure, it is quite clear that the configuration of the structure must be in the shape of a pyramid.

[357] There are reasons for that. The purpose of the framed assembly claimed is to distribute the weight loaded onto the snowmobile. Thus, the main components of the frame assembly form triangular or pyramidal configurations. Those bars that compose the frame assembly are said to "work only in tension and compression, without bending. They are the brace. Therefore, each bar of frame assembly 84, 190, 191 intersects at a common point..." (para [00109]).

[358] The purpose of the structure is to enhance the rigidity of the frame which improves handling. But the structure requires that the legs meet at an apex. It bears reproducing again this passage taken from para [00112] of the specification:

> [00112] …
>
> > Because frame assembly 84, 190, 191 adds strength and rigidity to the overall construction and absorbs and redistributes many of the forces encountered by the frame of the vehicle, the panels that make up the tunnel 86 and the engine cradle 88 need not be as strong or as thick as was required for the construction of frame assembly 52.

[359] AC spent not insignificant time and efforts dealing with the possibility that the rear legs in the pyramidal structure may be parallel, or close to, to each other. With all due respect, figures 14, 19, 20 and 26 show that the legs converge toward the apex. They may not start converging from the start, but they converge. The figures may allow for legs to start running parallel with each other, but they do not remain parallel. Rather they turn to converge towards the top. That is how the Patent can speak in terms of "pyramidal constructions" and "pyramidal structure". The view expressed by expert Breen, for BRP, is the one that is consistent with the 264 Patent:

> 162. The person skilled in the art would therefore conclude that the pyramidal brace assembly in fact only needs to be generally pyramidal, as long as the bars forming the brace assembly generally converge towards a common spatial region where external loads are transmitted. In that general configuration, the loads will indeed be transmitted in tension and compression through the bars, with little or no bending.
>
> (expert Breen's report of October 26, 2014, P-39)

(e) *"form an apex not forward of the engine"*

[360] There appears to be a general agreement that the apex refers to the top, the peak, the highest point of a structure or a geometrical figure. Strictly speaking, in that context, it would be a high point towards which the elements converge. That is clearly the idea behind the pyramidal brace assembly. In the 264 Patent, claims 3, 6, 18, 21 and 23 describe the apex as being formed by the legs at the front and the back converging, in the words of claim 6, to "form an apex not forward of the engine". Adding the upper column to the mix (claim 8) does not vary the concept.

[361] It is not disputed either that the apex of this Patent is not expected to be a single point. It refers in fact to a spatial region which needs to be limited. I accept that Figures 6, 7, 13 and 14 provide an adequate illustration of an apex in the context of this invention. The legs do in fact converge, and they converge to a relatively small area.

[362] The skilled person in the art will have recognized from para [00109] of the disclosure that there is a need of a triangular or pyramidal configuration to the brace. As pointed out, "(a)ll of the bars of the frame assembly 84, 190, 191 work only in tension and compression without bending. Therefore, each bar of frame assembly 84, 190, 191 intersects at a common point, the bracket 126 (in the non-variable steering geometry) or variable geometry steering bracket 374. With this pyramidal shape, the present invention creates a very stable geometry". As the disclosure acknowledges, the proposed frame assembly adds strength and rigidity; it also absorbs and redistributes many of the forces encountered by the frame, from front to back. It is the pyramidal configuration that allows such redistribution. If there is no convergence, the effect cannot be the

same. I therefore accept the evidence of Mr. Breen that the area of convergence must be relatively small in order to conform to the notion of an apex. As already indicated, such view is consistent with figures in the Patent depicting convergence.

(f) *legs*

[363] It will be apparent from the previous discussion that the 264 Patent requires that the legs, both at the front and at the back of the snowmobile, must converge to an apex in order to have a pyramidal configuration:

> [0017] …
>
> > The left and right legs of the rear brace assembly and the forward support assembly connect to one another at an apex to form a pyramidal structure above the tunnel and engine cradle.

[364] Although the legs at the back of the snowmobile are attached to the tunnel, or the frame, they are not always tubular structures. But they always converge to an apex. Similarly, the legs at the front of the snowmobile converge towards an apex. I accept Mr. Breen's testimony that the converging is needed to transmit forces from the front (with the use of shock-absorbers) connected to each ski. I also accept that the front support assembly, which is a term used in a number of claims and in the disclosure ("forward support assembly"), provides a supporting structure. My own examination of the front support assembly persuaded me that the assembly provides support to the steering assembly because the legs converge toward an apex. That would not be a difficult observation to make by a POSITA.

V. Infringement

[365] The examination of the possible infringement of the four Patents-in-suit should take place by examining the 264 Patent (Frame Construction Patent) alone, and then the three Rider Position Patents (106, 813 and 964), with the 964 Patent relating to the relative position of the ankles, knees and hips of a rider sitting on a newly configured snowmobile, the so-called "REV" (radical evolution vehicle), and the 106 and 813 Patents being concerned with various measurements (relative to centers of gravity, steering position, seat position and footrest position). These measurements must fall within a predetermined range according to the claims that have been asserted by BRP.

[366] Out of 247 claims in the four Patents-in-suit, BRP has asserted 56 in its final statement of claim. Some claims were asserted to be infringed by all accused snowmobiles (divided in nine groups by expert Larson, for BRP, while other claims would have been infringed by all of the accused snowmobiles with the exception of some groups).

[367] After a brief summary of the law pertaining to infringement will follow an examination of the 264 Patent. I will then review the three Rider Position Patents.

A. *The law*

[368] The burden is on BRP to establish infringement of its Patents. That standard of proof is that applicable in civil proceedings. And there is only one standard: proof on a balance of probabilities (*F.H. v McDougall*, 2008 SCC 53, [2008] 3 SCR 41[*McDougall*]; *Tervita Corp. v Canada*

(Commissioner of Competition), 2015 SCC 3, [2015] 1 SCR 161; *Canada (Attorney General) v Fairmont Hotels Inc.*, 2016 SCC 56). As the Court said in *McDougall*, the "evidence must always be sufficiently clear, convincing and cogent" (para 46). That has not always been the case.

[369] Although the primary burden is on BRP to convince, the Defendants run the risk of being found as infringing the Patents if they do not offer evidence of their own. The issue is not that, in view of a lack of convincing evidence by the Plaintiff, the relative silence of Defendants would be held against them. It is rather that relying on the onus of proof as sole defence may not be satisfactory, as was the case in *Whirlpool*:

> [82] The evidence of infringement is not very satisfactory. The appellants declined to call a witness to describe the drive means utilized in their accused machines, preferring to sit back and argue that the respondents had not made sufficient proof. Whatever evidence of the mechanics of the appellants' system was obtained during pre-trial discovery was apparently inconclusive. The trial judge based his opinion on a video showing a rotating General Electric auger under a "medium or light wash load".
>
> [84] The appellants' reliance on the onus of proof, while perhaps sound tactics, left the court in an awkward position. The respondents' evidence of infringement, while thin, was put into the balance against no evidence at all. The Federal Court of Appeal concluded that the videotaped evidence supported the inference of continuous drive as well as the observed continuous rotation. I conclude that in the absence of any GE evidence to the contrary, it was open to that court to use that inference to find, as a fact, infringement of the continuous drive claim.

[370] There will be infringement only if the accused product includes all the essential elements of a particular claim (*Free World Trust*, *supra*, para 31(f)).

B. *264 Patent*

[371] AC argues that its snowmobiles do not include a "seat disposed on the tunnel", an "engine cradle", a "sub-frame", and an "upper column", all essential elements in their view.

[372] It will not be necessary to analyse each of those terms in details as the Court has reached the conclusion that the proper definition of "engine cradle", as used in the 264 Patent, requires that there be walls, complete or incomplete, in order for an engine to be "disposed in the cradle" (para [0015] and [0016]).

[373] My review, as part of the claim construction, has convinced me that the engine cradle referred to in the 264 Patent is of a particular variety. As I have already indicated, expert Breen, for BRP, indicated very fairly that "(t)he engine cradle could be a structure delimited by solid walls, or alternatively an open structure" (para 147, P-39). The only indications, in writing or through the figures included in the 264 Patent, refer to the engine cradle having walls. Read as a whole, the 264 Patent leads the reader to only one conclusion: this Patent considers exclusively a walled engine cradle, not the alternative referred to by expert Breen. The Patent even extols the virtue of having a walled engine cradle because the "right engine cradle wall 174 reflects radiant heat from engine 104 to assist minimizing heat dissipation from engine 104" (para [0079]).

[374] In fact, having a walled engine cradle makes sense when one considers the object of the Patent. The inventor constructs a frame, together with related structural elements, for the purpose of enhancing the ruggedness of the vehicle. It is therefore less than surprising that the specification

makes the engine cradle, together with the tunnel and the sub-frame, part of the frame assembly (para [0011]). The three elements are in this invention connected together; indeed, the upper column is extending "upwardly from the engine cradle to connect with the forward support assembly" which constitutes one half of the pyramidal brace assembly.

[375] In an attempt to counter AC's argument that its snowmobiles do not include the engine cradle of the 264 Patent, BRP argues that they must have an engine cradle since a snowmobile must hold an engine (Memorandum of fact and law, para 560). It seems that the argument boils down to arguing that where ever the engine is attached to the snowmobile becomes the engine cradle. The difficulty resides in the incontrovertible fact that this Patent limits itself to one variety: the cradle has walls. It is not merely an area where the engine will be mounted. The engine cradle of the 264 Patent is part of the frame as it is meant to add stiffness and rigidity. That is the engine cradle that is represented as being an essential element of a Patent, the purpose of which is to add stiffness and rigidity to the snowmobile and its frame.

[376] BRP even argued that AC has used in the past the term "engine cradle" to describe the structure which received its engine (Memorandum of fact and law, paras 563-564). That is neither here nor there. P-69, the US 863 Patent, used in the cross-examination of Ken Fredrickson, speaks in terms of "a space for receiving the engine". It is surely possible to refer to the area where an engine is mounted as an "engine cradle". Mr. Breen readily conceded that the cradle could be an open structure. However, in order to qualify as the "engine cradle" of the 264 Patent, it must be the same type of engine cradle that is made an essential element of a Patent whose objects are those of the 264 Patent and whose description will correspond to the description found in the 264 Patent.

Both Mr. Girouard and Mr. Wubbolts referred to the cradle having walls. That corresponds to the notion presented in the 264 Patent.

[377] All of the asserted claims of the 264 Patent require that there be an “engine cradle”. There is most probably a reason that can be inferred for that. If the engine cradle does not play a role in the rigidity of the vehicle, because it is only an area that receives the engine which is then mounted in that “area”, there is no need to have it included in the claims and featured prominently throughout the 264 Patent. The cradle has a purpose in fulfilling the utility of the invention of the 264 Patent.

[378] AC’s evidence is overwhelming in this case that its snowmobiles have their engines mounted in various ways without using the “engine cradle” of the 264 Patent. Indeed, that evidence was not countered by BRP other than claiming that there is no need to have walls to fall within the scope of the term “engine cradle” as part of the 264 Patent.

[379] In my view, BRP has not discharged its burden on a balance of probabilities that the AC engines are located in an “engine cradle” in accordance with the 264 Patent. Actually, the evidence offered by AC is persuasive that its engines were mounted in an area that does not conform to the requirements for the “engine cradle” of the 264 Patent. That in my view is enough to dispose of the issue.

[380] The construction of the 264 Patent did not rely on other instruments but the specification in order to come to the conclusion that the engine cradle in the 264 Patent must be walled. The Patent

speaks for itself. There is also, in the nature of corroborating evidence, exhibit D-14 that suggests strongly that the type of engine cradle, with walls, was added on purpose by BRP. To put it in the vernacular, BRP meant it. There is also the evidence of Messrs. Girouard and Wubbolts. But D-14, which is a BRP patent application for an "engine cradle for a vehicle" (CA 2350285), is merely confirmation that BRP considered a particular type of engine cradle, one with walls. The inventors would have been the same four inventors as those of the 264 Patent. The description of the engine cradle of the application has walls. Indeed, it has the advantage that the new walls present, compared to the prior art, as can be seen at the end of the application's page 26:

> Because the frame assembly 84 is designed to absorb and transfer energy from the frame, the thickness of left engine cradle wall 393 and right engine cradle wall 174 need not be as great as was required in the prior art construction (see, e.g., Fig. 4). Specifically, the construction of the engine cradle 56 in the prior art required a plate thickness of approximately 2.58 mm. With the frame assembly 84, however, the plate thickness for engine cradle 394 may be reduced to less than about 2.5 mm. More preferably, the thickness may be reduced to about 2.0 mm, which results in a significant weight savings.

Furthermore, the figures in the application and in the 264 Patent are nearly identical where the engine cradle is featured or presented.

[381] Both the application and the 264 Patent would have the same filing date and the same priority in US Patent 60/237, 384.

[382] It seems to be undeniable that the invention includes an engine cradle that has walls. Having found that the area in which AC's engines are mounted does not correspond to the "engine cradle" of the 264 Patent, and that the invention claimed by the inventors requires that the engine

cradle be walled, it follows that an essential element of the Patent is different. Accordingly, the Plaintiff has not established that its 264 Patent has been infringed.

[383] Finally, had I had to consider more fully the terms "sub-frame" and "upper-column", I would have found in favour of BRP. AC's snowmobiles include both an upper column and a sub-frame as the terms are defined in the 264 Patent and understood by the person skilled in the art. In my view, the evidence offered by Mr. Breen is unassailable. There was nothing brought forth to jeopardize that conclusion. As for the "seat disposed on the tunnel", because it is also important concerning the Rider Position Patents, a more fulsome analysis will be provided in the part of the reasons dealing with the infringement of the REV Patents.

C. *The Rider Forward Patents*

[384] The Plaintiff contends that all accused snowmobiles are "rider forward" snowmobiles. This relates to the radical evolution vehicle (REV) which presents a different configuration for snowmobiles. The new configuration brings the rider forward on the straddle seat, closer to the gravity center of the vehicle; BRP's theory appears to be that a number of measurements can be made of the rider relative to the snowmobile that will reflect the configuration of the snowmobile.

[385] BRP asserts repeatedly that the invention is the re-designed snowmobile that is needed in order for the rider to sit in a forward position, compared to the traditional snowmobile. The three Patents-in-suit all offer different measurements that would reflect a new configuration of the snowmobile being the subject of the three Patents.

(1) The 106 Patent

[386] Claims 1, 7, 8, 27, 28 and 77 were asserted originally.

[387] Claims 1, 7 and 8 are concerned with the centers of gravity of the snowmobile and that of the snowmobile with rider. Once these have been established, there are measurements of the horizontal distance that are taken between the two centers of gravity. They are in a cascading way from 0 to 14 cm, 2 to 12 cm and 4 to 10 cm, all inclusive.

[388] Claims 27 and 28 are concerned with the distance between the forward-most drive axle and the center of gravity of the snowmobile's rider (35 to 55 cm and 37 to 47 cm respectively). Claim 77 refers to the angle created by a line passing through the center of gravity of the snowmobile with rider and the center of gravity of the rider alone. Where that line intersects with the horizontal, the claim requires that that angle be within a specific range of 45º to 75º.

[389] I note that claims 8 and 28 would not cover all of the AC snowmobiles accused in this case, as some groups of accused snowmobiles, as organized by expert Larson, would not be infringing on the basis of these measurements. Thus, some measurements capture some AC models while the same measurements would not capture others. For instance, some AC models were not captured if the distance between centers of gravity is narrower than a range of 2 to 12 cm. In the end, they were not asserted anymore.

(2) The 813 Patent

[390] This time, it is claims 37, 38, 48 and 73 that are asserted in the end. Claims 39 and 49 are not in play anymore; they would not have covered all of the accused snowmobiles as some groupings would not be infringing on the measurements.

[391] In the case of the 813 Patent, there are three positions that are of importance: the seat position, the footrest position and the steering position. Other than offering angles corresponding to lines drawn through various positions, the 813 Patent is a close parent of the 106 Patent: the disclosures are virtually identical and both Patents define the position of a rider on a new snowmobile configured to have the rider sitting forward of the position a rider would be sitting in when on a more traditional snowmobile, before the REV.

[392] Independent claim 9 identifies 3 angles, and these 3 angles have between them a specific relationship. Angle α is determined at the intersection of a line passing through the seat position and the steering position and a line passing through the seat position and the footrest position. Angle β is determined at the intersection of a line passing through the footrest position and the seat position and the line passing through the footrest position and the steering position. The third angle, γ, is formed at the intersection of a line passing through the footrest position and the steering position and the line passing through the steering position and the seat position. These three angles have the following strict relationship among them: Angle $\alpha \geq$ Angle $\beta \geq$ Angle γ.

[393] Claims 37 and 38 depend on claim 9. Thus, the claims include the limitations of claim 9; they also include distances between two centers of gravity. These claims require that be determined the center of gravity of the snowmobile and the center of gravity of the snowmobile and its rider. There can then be measured the distance between the two centers of gravity which must be, in the case of claim 37, between 0 and 14 cm (inclusive), and between 2 and 12 cm (inclusive) in the case of claim 38. The following claims, not asserted here, would have limited the distance even more.

[394] Claim 48 is dependent on claims 46 and 9. In effect, it introduces a different measurement than those asserted in claims 37 and 38, but that new measurement is itself a further limitation of claim 9. This time, it is the distance measured between the forward-most drive track axle and the center of gravity of the rider. Claim 48 calls for the distance to be between 35 and 55 cm (inclusive). Claim 49, which is not asserted in the end, would have the distance as being between 37 and 47 cm (inclusive).

[395] Finally, claim 73 depends on claims 72 and 9. Claim 72 compares the center of gravity of the snowmobile and its rider, with the center of gravity of the rider. Once these two centers of gravity have been determined, the line that passes through the two points intersects with horizontal to form an angle. According to the Patent that angle must be between 45º and 75º (inclusive) for the snowmobile to infringe on the monopoly associated with the new configuration.

(3) The 964 Patent

[396] There are a certain number of claims that were asserted in this case: they are claims 1, 4, 6, 8, 9, 13, 15, 16, 20, 24, 26, 27, 35, 37, 40, 42 and 48 (out of a total of 49 claims). In the end, claims 1, 4, 6, 8, 13, 15, 16, 20, 24, 26, 27, 35, 37, 40, 42, 48 were asserted. A quick summary of the claims may facilitate the understanding of issues.

[397] The 964 Patent is entitled “Snowmobile with Active Rider Positioning”. It is concerned with the hips, knees and angles of a rider once positioned on the reconfigured snowmobile, the knees being disposed in front of the ankles and below the hips. Instead of “sitting back”, like would be the case with more traditional snowmobiles (figure 1 of 964 Patent), the new configuration puts the rider in a different position.

[398] Claims 1, 4, 37 and 40 address the position of the hips compared to the knees: the hips are above the knees where a standard rider having the dimensions and weight of a 50-percentile human male is used as the ruler. Claim 4 requires that the hips be above the knees by a vertical distance of between 0 and 20 cm.

[399] Claim 40, which requires that the vertical distance between the hips and the knees be between 0 and 20 cm, has further limitation that the ankles of the standard rider are situated behind the knees.

[400] Claims 6 and 42 put the hips of the rider behind the ankles. In claim 6, the horizontal distance between the two is between 5 and 40 cm. Claim 42, which is also concerned with the ankles of the rider being behind his knees, also requires that the horizontal distance between hips and ankles be between 5 and 40 cm.

[401] Claim 8, an independent claim, requires that the ankles of the standard rider are behind the knees. Other claims, not asserted here, provide for cascading measurements of the horizontal distance between the two.

[402] Claim 13 is dependent on claim 8, which speaks of the ankles being behind the knees, with the added limitation that the knees are disposed below the steering position by a vertical distance of at least 25 cm. Similarly, claim 24, which is dependent on claim 1 which requires that the hips be above the knees, adds the further limitation that the knees are disposed below the steering position by a vertical distance of at least 25 cm.

[403] Claims 15, 16, 26 and 27 all deal with the distance between the ankles and the steering position. Claims 15 and 16 are dependent on independent claim 8, which is concerned with the position of the ankles relative to the knees, and they require that the ankles be behind the steering position by a horizontal distance of between 5 and 50 cm in the case of claim 15, and at least 15 cm in the case of claim 16. Claims 26 and 27 are dependent on independent claim 1, which is concerned with the position of the hips that are disposed above the knees, and they require that the ankles be behind the steering position by a horizontal distance of between 5 and 50 cm in the case of claim 25, and at least 15 cm in the case of claim 26.

[404] Claims 20, 35 and 48 address a different measurement. This time, it is the relationship between the steering position which must be forward of a forward most position of the footrest. Claim 35 combines that limitation with the measurements stemming from independent claim 1, which requires that the hips be above the knees, and other limitations (hips relative to steering position, hips behind ankles, knees below steering position, knees above ankles, knees behind steering position). Claim 48 does the same thing with the measurements stemming from independent claim 8, which requires that the rider's ankles be behind the knees.

[405] In fact, when coupled with other measurements, there would appear to be a rather large number of possible permutations. For instance, claims 15 and 16, though concerned ostensibly with the horizontal distance between the ankles and the steering position, claim a snowmobile constructed and arranged also in accordance with claims 8 to 12 which are concerned with ankles being behind the knees by various horizontal distances.

(4) Seat disposed on the tunnel

[406] As with the 264 Patent, AC contends that its snowmobiles do not infringe because an essential element of the claims is not part of the accused snowmobiles. The structural element in dispute is the presence of "a seat disposed on the tunnel".

[407] The snowmobiles that were inspected by BRP, a total of 17, all had seats, but they were not disposed on the tunnel, according to AC. The Defendants argue that their seats are at least in part mounted to the gas tank.

[408] As shown in the section of the reasons for Judgment addressing claim construction, once the requirement of having a seat disposed on the tunnel is considered in context, it cannot be given the construction offered by AC. There is no indication that the words “disposed on” can be limited to the seat being mounted directly on the tunnel. The same words used elsewhere in the Patents (“disposed on”) cannot have that restrictive meaning and no reason was given why that should be the case for the seat.

[409] On the contrary, the words “disposed on” refer to the seat being connected to and above the tunnel, without the requirement that it be directly on the tunnel without anything in between, some intervening component.

[410] Accordingly, the seats on the accused snowmobiles are disposed on the tunnel as the term is understood in the Patents.

(5) The measurements

[411] In order to establish that AC’s snowmobiles infringed on the monopoly conferred to BRP through the asserted claims of the three Patents, the Plaintiff had to measure the snowmobiles produced by AC to ascertain whether they fit within the measurements asserted by BRP as reflecting its inventions. According to the evidence led at trial, there are 378 models. Such endeavour may be impossible. It would certainly have been costly.

[412] It is surprising that the Defendants were incapable of supplying computer-aided designs (CAD) for the vast majority of the snowmobiles that have been produced. The software is

commonly used in the design of products. In an answer to an undertaking, AC confirmed that whatever CAD it has does not include drawings with or without model (question 65 delivered on September 11, 2014). This also confirms the technical limitations.

[413] The lack of a tool that could have been of significant assistance to establish at a reasonable cost whether the snowmobiles produced by AC infringed the measurements of BRP Patents forced the Plaintiff to resort to different ways of establishing if snowmobiles produced by AC were in violation.

[414] The evidence in this case shows that AC has had the capacity to measure the center of gravity since at least as early as 2000 or 2001, according to an answer to undertakings (question 168, delivered on September 11, 2014). There is also ample evidence that it is common in the industry to "check-out" the competition. Mr. Halvorson identified a BRP snowmobile in a photograph showing it being dismantled. There is also the clear evidence that AC felt there was a "need to stop the "REV" momentum" (P-48). Something changed in the snowmobile industry with the introduction of the REV. Indeed, the Court was persuaded that the new configuration resulted in significant media coverage and commercial success for the Plaintiff (P-32). It cannot be denied that "something new" was noticed. I note the following comments, among others, in the Snow Goer of March 2002, where in an article entitled "Staff Report - A New REVolution":

> With the new REV chassis, Ski-Doo engineers broke out the ergonomics box, which dictates where and how a driver sits. For years, snowmobile riders have had their butts seated over the rear suspension's rear arm, their legs stretched forward and their feet in angled foot wells.

In the Snow Tech issue of April 2002, in an article bearing the title "2002 Ski-Doo MXZ REVolution (Prototype) – Do you know what it's like to start a Revolution (sic)? Ski-Doo does", one can read:

> Riding the REV, one becomes even more aware of how different this machine is. With the rider positioned 12" forward, the feeling of weight distribution and body positioning is more like a dirt bike than ever before. You can pivot your weight on the floorboards much like balancing on the foot pegs of a dirt bike. Instead of your weight being carried primarily by the rear arm of the rear suspension, you can now lean fore and aft, distributing your weight across the front suspension, front arm and rear arms of the rear skid.
>
> The REV projects a nimble sports car feel, much like a mid-engine Porsche. The centered mass and lighter overall weight, combined with the far-forward riding position, make the sled agile, nimble and quick reacting. It feels like a shorter vehicle (the sports car feel) with the rider this far forward. The basic concept is simple and valid: the rider is the single heaviest component of the machine/rider combination. Moving the rider 12" forward has a far greater affect on centering the mass and reducing the moment of inertia that any component relocation or re-design.
>
> Sitting all the way back on the seat on traditional snowmobiles causes a few things to happen that the REV eliminates; on "normal" machines, with the rider sitting all the way back on the seat, if you want or need to stand up for some bumps, you're basically forced to pull your body weight up off the seat with your arms and upper body, effectively bench-pressing your body weight. This causes upper body fatigue. On the REV, your feet are not out in front of you but underneath you, more like a dirt bike (ask a dirt bike rider what happens to the control of their scoot if they sit all the way back on the seat!). If you need to stand up to take bumps on the REV, your legs do all the work, and your legs are far stronger on most people than your upper body.
>
> The same goes for bumps. Sitting all the way to the rear on the seat can allow some wicked bumps to be taken by your stronger legs. Rarely does your back ever take a direct hit. By sitting so far forward, the rider is not exposed to the extreme motion at the end of the "lever", so the amount of energy being transmitted to your legs is less than what your back used to see. Back in the old days (1960s) when there really was no suspension under snowmobiles, riders

> always had their legs underneath them because this was the only suspension they had!

[415] The evidence is plentiful about the significant breakthrough the REV represented in 2002: it was due to improved ergonomics and centralized mass generated by the new configuration (Motorhead – The New Tangible Fall 2002; Supertrax International, December 2003, "Ski-Doo MX-Z Renegade – Adjusting Expectations – Think the REV Renegade is Just Hype? Think Again").

[416] The industry noted. In the March 2003 issue of Supertrax International, the magazine was reporting on a rumor that Polaris, another major player in the industry with Yamaha, "would share a REV-like new platform", although the magazine noted that the rumor did not materialize at the events which were rumored to have been selected. The same issue reported on an AC's Open Class Firecat that would have the driver's seating position much forward than production Firecats.

[417] Not only was the new configuration presented as having "changed the sport and ushered in a new era of snowmobile design and thinking" (Snow Goer, December 2003, Power Hungry), but there is evidence of the commercial success of the REV. In American Snowmobiler of November 2004 (Redesigned Mach Z bet to Blister the Lakes), the magazine states that "(t)he REV blind-sided the competition with its radical rider-forward position, and other makers are swallowing hard and running fast to catch up". In Supertrax International of March 2005 (Sharpening the Machete – More Ammo to stretch the Lead), the magazine reports that "(h)ere's what really underscores how slick the REV's arrival was: it has become the driving force influencing brand switching in 2005. The REV has been good enough to pry many butts off beloved marques and drag wallets out of

pockets in the pursuit of trying something new." The Snowmobile BC Magazine of Spring 2005 reported ("Ski-Doo 2006, All REV'd Up") that "(d)espite industry sales dropping significantly in 2005, Ski-Doo sales remained constant with 2004 levels this year. This is no doubt thanks to the incredible success of the innovative REV platform. Other OEMs have been clamoring to make certain their lineup has their mass centralized, their riders forward and more upright and even some snowmobiles sporting the 16" wide rubber."

[418] The Court is therefore persuaded by the evidence that the Plaintiff, BRP, developed a snowmobile, the result of such development being that the rider of the snowmobile is pushed forward by the configuration of the machine. In my view, the evidence is overwhelming (P-33, the Competition's reaction). The question remains however to determine that all, or some, of AC's snowmobiles infringed on the measurements of the Patents that were granted. That of course does not assure the validity of the Patents.

[419] Although the Patents announce that they are concerned with the overall design and construction of a snowmobile, and that the invention improves on the conventional design by repositioning the rider and redesigning the layout of the vehicle, one is hard pressed to find in the claims, or in the disclosure for that matter, any indication how the snowmobile is to be constructed or how the layout is redesigned.

[420] The reader is treated to an exposé of what are the most important elements of a snowmobile, but the reader will look in vain for the information to create the new configuration, the new design, the new layout. Patents 106 and 813 concede that "an exhaustive description of

each and every component is not provided, only a description of those elements required for an understanding of the present invention." (p. 7). That is overstating the case. At best, the elements may need to be re-organized are identified without any indication of what needs to be done for the new configuration to emerge.

[421] The inventors present instead various measurements which, one has to assume, would reflect the position taken by the rider. That too is less than clear.

[422] For the purpose of the infringement analysis, I accept that if measurements of the AC accused snowmobiles fall within the measurements of the asserted claims, it will be proven that the measurements infringe on the measurements of the asserted claims.

[423] The Plaintiff, BRP, used the services of two experts for the purpose of measuring AC's snowmobiles. Robert Larson is a senior Managing Engineer with Exponent Failure Analysis Associates [Exponent], a division of Exponent Inc. of Phoenix, Arizona. Exponent is an engineering and scientific consulting company covering over 90 disciplines, with a staff of some 900 composed of engineers, physicians and regulatory consultants.

[424] As already indicated, Mr. Larson is a mechanical engineer who studied at the University of Michigan where he earned a Bachelor of Science and a Master of Science in Mechanical Engineering. It is not disputed that he is an expert in Mechanical engineering, with expertise in measuring static and dynamic parameters of recreational vehicles. That includes overall geometry,

center-of-gravity location, moments of inertia, suspension properties and handling characteristics (P-41).

[425] The other expert retained by the Plaintiff is Dr. Christine Raasch, also an employee of Exponent where she is a Principal. She is a mechanical engineer, having earned a Doctor of Philosophy (Ph.D.) degree in Mechanical Engineering at Stanford University. She is an expert and has published peer-reviewed papers in the areas of biomechanics of human movement and injury, vehicle occupant dynamics and kinematics, occupant restraint systems as well as anthropomorphic test device (ATD) design, calibration and biofidelity. She is an expert in her field (P-43). In particular, Dr. Raasch has overseen testing utilizing a broad range of ATDs, including the Hybrid III 50^{th}-percentile male, the 5^{th}-percentile male and the 95^{th}-percentile male. She has assembled, adjusted, repaired and performed calibration tests on ATDs. Both have impressive resumes which are directly relevant. They were also very impressive witnesses.

[426] Initially, Mr. Larson performed measurements on two AC snowmobiles on March 1 and February 28, 2012. The measured snowmobiles were:

- the 2012 M800 Sno Pro (153")
- the 2012 F800 LXR.

[427] Between July 21, 2014 and August 14, 2014, measurements were performed on twelve more AC snowmobiles:

- the 2012 M800 Sno Pro (162")
- the 2012 F1100 LXR

- the 2014 ZR 7000 LXR
- the 2013 XF 800 Sno Pro Limited
- the 2010 Sno Pro 500
- the 2008 Sno Pro 600
- the 2012 Sno Pro 600
- the 2007 Jaguar Z1
- the 2011 F570
- the 2007 F8 Sno Pro
- the 2008 Arctic Cat TZ1 LXR
- the 2013 Bearcat 570 XT.

[428] Three more models were to be measured during the same period. However only the position of the centers of gravity were measured with respect to these three AC snowmobiles:

- the 2007 F1000 Sno Pro
- the 2014 F570
- the 2009 Bearcat Z1 XT.

[429] In order to perform measurements that would be compared, it was deemed necessary to follow a protocol which would reflect the three Patents-in-suit (P-42, at tabs 3 and 11). The Protocol for the measurements of the first two Arctic Cat snowmobiles (Models F800 and M800) was more rudimentary. The rider is the standard rider with the dimensions of a 50th-percentile human male, dressed in snowmobile clothing. The position on the snowmobile is that of the rider being seated in a biomechanically neutral position with feet disposed on the footrest and the hands disposed on the steering device. These positions correspond to the footrest position and the

steering position. The steering, footrest and seat positions are said to be found in the following fashion at exhibit P-42, tab 3:

> - The Steering position is determined by placing the hands of the standard rider described above, on the steering device in normal operating position. The steering position will be the intersection of the center of the palm of the hands of the standard rider and the steering device.
>
> - The Footrest position is in the location of the arch of the foot of the rider when his feet are placed in normal operating position on the vehicle. Under normal operating conditions, the rider's feet will rest on a forward portion of the sideboards.
>
> - The Seat position is the point at which the weight of rider is exerted on the seat of the snowmobile while scaled in a biomechanically neutral position on the seat, with its feet disposed on the footrest at the footrest position and its hands disposed on the steering device at the steering position, and with the snowmobile being steered straight and headed straight on flat terrain and being in running conditions. The seat position may be determined by placing the standard rider on the snowmobile in the biologically neutral position and drawing a line from his shoulder through his hip. The intersection of that line with the seat may be considered to be the seat position 130.

[430] As was seen from the examination of the claims asserted in the end, the claims rely on the centers of gravity (snowmobile, rider and snowmobile with rider) and the three positions. There is also a need to rely on one rider, that rider being according to the Patents the 50^{th}-percentile human male. But what general position should be taken by that person in order to determine the steering, footrest and seating positions?

[431] The 106 and 813 Patents speak of a biomechanically neutral position, while the 964 Patent is content with the standard position of a rider. The Exponent protocol defines "biomechanically neutral position" as do the 106 and 813 Patents:

> - A biomechanically neutral position is one wherein each of the opposing muscles of the major supporting muscle groups that maintain the rider in his position are in equilibrium. A biomechanically neutral position generally corresponds to the position of the standard rider as shown in the figures of the Measurements section below (see page 5 and following document).

[432] The more refined protocol (P-42, tab 11) provides for a detailed series of steps taken to position a 50th-percentile male ATD, including steps taken to identify precisely the joints (ankles, knees, hips) that will be the subject of measurements. The measurements were made in 2012 with a laser system and in 2014 using photogrammetry. As for the centers-of-gravity, the experts were careful to replicate the conditions (including the drop in height caused by the weight of the rider) such that where the platform on which the snowmobile (with and without rider) was tilted to calculate the various centers-of-gravity, the expert was able to have a high degree of comfort that the measurements were accurate.

[433] It is noteworthy that the use of an ATD allowed for the tightening of all accessible joints (so that the ATD can remain rigid, even where the platform is tilted), as well as to affix the hands to the handlebar grips with zip-ties and place targets at the most appropriate locations identifying the wrist, elbow, shoulder, head and foot positions. Were installed target brackets for the hip and knee locations, as the ankle location was also marked.

[434] The taking of the various measurements was thoroughly documented (P-42, tabs 11, 12 and 13), with the full complement of the measurements and numerous photographs. The record is voluminous. This was an impressive display. One was left with the strong impression that these experts had nothing to hide and had excellent expertise.

[435] The measurements of the 17 snowmobiles showed that they all fall within some asserted ranges of the 106, 813 and 964 Patents, with the exceptions such as the 2008 TZ1 LXR which does not fall within asserted claim 9 of the 813 Patent (Angles $\alpha \geq \beta \geq \gamma$, the angles relating to the various seat, steering and footrest positions). However, the 2008 TZ1 LXR snowmobile infringes other claims of the Patents-in-suit.

[436] The Defendants challenge the allegations of infringement on two fronts. They contend that AC's snowmobiles do not meet one of the essential elements of the Patents in that they do not have a straddle seat disposed on the tunnel. The Court has already disposed of that contention.

[437] AC also took issue with the way the measurements raising a number of arguments. Thus, the Defendants argue that the measurements should not have been taken using an ATD: the Patents speak of riders and they mean human riders. On numerous occasions, reference was made to different riders having varying riding styles. In my view, this type of criticism is misplaced.

[438] These Patents, for he who wants to understand them, are framed around the proposition that the rider of the new snowmobile would naturally take a riding posture that would be different from that on the conventional snowmobile. The 106 and 813 Patents dedicate many paragraphs of their disclosure to compare figures 1 and 2 which represent the prior art and the new snowmobile. As part of the comparison, the inventor shows the different positioning of a standard rider, one who is in a biomechanically neutral position on the seat. Because of the new configuration of a snowmobile, the position taken by the standard rider changes. The idea is therefore to use the 50^{th}-percentile United States human male to determine what that new position is through a series of

measurements intended to capture that new position. Mr. Breen, the expert retained by BRP, was right to express the view that the position of an actual rider is irrelevant to the issue of infringement (cross-examination, March 24th, 2015, at p. 148-149). If a rider decides to ride aggressively by coming even closer to the steering position or, conversely, he sits back on his seat thus exerting pressure on his arms and legs, it does not matter. This would not constitute the biomechanically neutral position as defined in the 106 and 813 Patents, or the standard position of the 964 Patent. It is essential to keep in mind that the Patents seek to define a new configuration through the measurements of the 50th-percentile human male. By taking the standard position, and by using as a ruler the 50th-percentile, the measurements seek to establish the monopoly asserted by the inventor. What actual riders will do in reality while driving on trails, climbing mountains or racing each other is less than relevant.

[439] I fail to see why using an ATD should to be frowned upon. Again, what is to be assessed is the standard position of a rider. There are indeed advantages to using an ATD. An ATD can be held firmly in position, including the tightening of the joints such that the ATD remains rigid. It is also to be used for the measurement of the center-of-gravity of the "system" (snowmobile with rider) which requires that the platform on which the snowmobile is attached, with the rider on it, be tilted. That makes the taking of measurements repeatable.

[440] AC argued in its memorandum of fact and law that "Dr. Raasch admits that there is not one distinct biomechanically neutral position for a 50th-percentile rider". While it is true that Dr. Raasch agreed generally with the question asked during her cross-examination (March 25, 2015, at p. 189), the matter takes a different texture when considered in context. The exchange was in

relation to different snowmobiles having a different geometry, a different design. It is worth quoting in its entirety the exchange between counsel and the witness:

> COUNSEL: Well there's a different snowmobile and that will change the posture of the rider; correct?
>
> DR. RAASCH: Right. I think that we -- we all agree I think that it has to potentially -- even a change in the seat height is going -- could potentially produce changes in leg angles. Even if the rider wanted to – wanted to sit voluntarily the same way, there would be a physical change by the geometric constraints.
>
> COUNSEL: Okay. Change in geometry, change in the design components and dimensions of the snowmobile. Like shape and design of the seat and the handlebars and so on is going to change the posture as well; correct?
>
> DR. RAASCH: Yes.
>
> COUNSEL: So there is not one distinct biomechanically neutral position for a 50^{th} percentile. Is that fair?
>
> DR. RAASCH: Yes, I agree with that. I think that we -- the way that we felt that it needed to be defined that it could not be a single position because it needed to take into account variations in geometry. And in order to do that, we had to -- for example, we had to design our protocol to allow such variation.

In other words, the geometry of the snowmobile will affect the standard position, the biomechanically neutral position that will be taken by the rider, whether he is the 5^{th}, 50^{th} or 95^{th} percentile. It is exactly the result that is expected. Similarly, it should not be surprising if changes to the position of the ATD result in variations in measurements. Once again, that is to be expected. That is why it was so important that the measurements be so thoroughly documented. Dr. Grewal, the expert retained by AC, commented in his rebuttal report (D-123) that "(t)he tables above show that moving the ATD either forward or rearward from the position that Exponent used resulted in meaningfull variation for certain of the measured values" (para 51). No one should dispute the

opinion of Dr. Grewal when he says that "(i)t is therefore my opinion that ATD placement has an effect on whether a snowmobile will be found to fall within the claim limitations of the BRP patents" (para 53). That is what is expected and why the measurements must be taken rigorously, with the assistance of a rider or an ATD that conforms with the 50th-percentile United States male positioned as a standard rider in a standard position.

[441] It is true that figures 19 and 20 of the 106 and 813 Patents show the dimensions of a 50th-percentile human male that are remarkably mistaken. There is no need to be a person of skill to reckon that the figures are largely useless. It is rather ironic that an argument was presented that Exponent did not use those dimensions in order to compare the results. The Defendant's memorandum of fact and law goes on to argue that "(a)s such Exponent has no scientific basis to say that the ATD used for its experiments has the same dimensions as the standard rider of the patent" (memorandum of fact and law / re infringement, para 420).

[442] The truth of the matter is that it would have been impossible to find an ATD with dimensions that are so obviously mistaken. The person of skill would have reached that conclusion without hesitation and would have resorted to the ATD that fits the 50th-percentile, which is what Mr. Larson and Dr. Raasch did. David VAVER wrote in *Intellectual Property Law*, 2nd Ed, Irwin Law, 2011[*Vaver*]:

> All is well only if the skilled worker would readily spot the mistake or omission and could quickly connect it by using common general knowledge and the rest of the patent, but without prolonged research inquiry or experiment or inventiveness.
>
> (Pages 342-343)

[443] Dr. Grewal, for the Defendants, argues that an ATD cannot simulate the active riding of a human on a snowmobile. He made that criticism in his first report (D-121, para 125) as well as in his rebuttal report (D-123, para 11). I would put this concern in the same category as the one concerning the fact that a snowmobile is driven by a human being, not an ATD. It does not matter that a snowmobile is requiring active riding. The Patents are only concerned with the configuration of the new snowmobile which brings about a number of measurements with respect to a 50^{th}-percentile United States male sitting on the snowmobile in a biomechanically neutral position or in a standard position. It does not matter that, per force, a rider will change position as he operates the snowmobile in various conditions. It suffices that the ATD be positioned on the measured snowmobiles so that it corresponds to the rider's position in the Patents.

[444] I read, and I re-read, the reports produced by Dr. Grewal; I read twice his testimony before the Court. At the end of the day, this is no more than a valiant effort to find fault with the way the measurements were performed by Mr. Larson and Dr. Raasch. If there were mistakes in the methodology, one would have to expect that this results in material changes, such that measured snowmobiles, which fall within the ranges of the Patents when measured by Mr. Larson and Dr. Raasch, would in fact be shown to fall outside the range if measured by Dr. Grewal according to a proper and better methodology.

[445] To his credit, Dr. Grewal provides the results in his rebuttal report (D-123) of his own measurements. Five snowmobiles already measured by Mr. Larson were measured by Dr. Grewal with an ATD seated on the snowmobiles in different positions presented as "mid", "forward" and "rearward" (D-123, para 47). It is not easy to understand why that was done because, very clearly

from the photographs presented, the "forward" and "rearward" positions cannot even approach the biomechanically neutral position/standard position of the Patents-in-suit. The mid-position suffices as an approximation.

[446] Nevertheless, none of the measurements taken of the five exemplars already measured by Mr. Larson falls outside the numerical value (D-123, para 49, Exhibit F). The only negative conclusions drawn by Dr. Grewal are that "(t)he tables above show that moving the ATD either forward or rearward from the position that Exponent used resulted in meaningful variation for certain of the measured values" (D-123, para 51). That is not surprising. Indeed that is expected. That is why the Patents require that the rider be in a biomechanically neutral position/standard position, which corresponds more or less to the "mid" position in Dr. Grewal's experiment.

[447] Dr. Grewal also reported, at para 52, on a trend he noticed. He found that the distance between the forward most drive track axle and the rider's center of gravity was outside the scope of limitation of some claims of the 106 and 813 Patents. But that observation is valid only where the ATD is in the forward position, a position which is far removed from what the Patents teach. When the ATD is placed in the position used by Mr. Larson, which corresponds much better, in my estimation, to the teaching of the Patents, the results are reported very fairly by Dr. Grewal as being:

> 52. …However, when the ATD was in a position that mimicked Exponent's ATD placement, the measured value was within the limitations of these claims or within the limitation of the claims where considering the margin of error.
>
> (D-123)

[448] The evidence concerning the exemplars used by BRP is convincing. As in *Whirlpool*, the Defendants chose to sit back to some extent and argue that the Plaintiff has not made sufficient proof. However, where 5 of the exemplars are measured by AC's expert, his measurements confirm that they fall within the measurements of the asserted claims. I have examined carefully BRP's evidence concerning the measurements relative to the exemplars. It is abundant and persuasive. It is even corroborated by the experiment conducted by Dr. Grewal. When the evidence of BRP is put in the balance with that which was offered by AC, BRP's evidence is overwhelming. The evidence of Mr. Larson was cogent and his reports are clear and fully documented. His expertise in the taking of measurements came through his reports and his testimony. He was assisted by Dr. Raasch, an expert in biomechanics practice, and in particular with ATDs. The Court therefore accepts BRP's contention that the snowmobiles measured fall within the asserted claims' limitations of the three Patents-in-suit.

[449] However, this conclusion does not dispose completely of the issue of infringement as BRP has identified 378 models of AC's snowmobiles that would be in violation of one or more claims, but measured only 17.

[450] BRP led evidence involving Mr. Larson on how representative the measurements taken are of the whole population of accused models. The Plaintiff contends that it would have been relatively easy to perform measurements had CADs of AC's snowmobiles been made available as would be expected, says BRP, from as sophisticated a company as AC. Adequate CADs were not produced.

[451] The Plaintiff had to resort to an alternative method to seek to prove its case with respect to the accused 378 models. The basic assumption is that the 378 models are not all different: models can therefore be grouped in view of similarities seen between accused models. Mr. Larson offered 9 such groupings.

[452] Mr. Larson gathered a large amount of documentation in an effort to identify the characteristics of AC's snowmobiles. He was able to use among considerable material specification sheets, information originating from Arctic Cat's brochures, AC's own website. There were obvious similarities. From that material, he was able to group at first by chassis type. As he testified, Mr. Larson was attempting to group snowmobiles by design. Thus, he considered the chassis data which would have very similar track width, track length, overall width, overall length and ski stance. As he testified in his initial report (P-42), "(f)rom this analysis it became clear that there are well-defined groups of snowmobile models that share the same overall geometry" (para 19). These 9 groupings are listed at paragraph 20 of Mr. Larson's report (P-42):

(a) M- model snowmobiles with 153 inch track length, model years 2012-2015;

(b) M- model snowmobiles with 162 inch track length, model years 2012-2015;

(c) F- and ZR- model snowmobiles equipped with a ProCross chassis, model years 2012-2015;

(d) XF- model snowmobiles, model years 2012-2015;

(e) Race snowmobiles equipped with a Sno Pro chassis, model years 2008-2014;

(f) Race snowmobiles equipped with a ProCross chassis, model years 2012 and later;

(g) F5, F6, F8, F570, F1000 and Z1 Lynx 2000 model snowmobiles, model years 2007-2015;

(h) T-series and Lynx 2000 LT model snowmobiles, Bearcat snowmobiles with 15 inch track width and EXT versions of F8 and Z1 model snowmobiles, model years 2008-2015;

(i) Bearcat snowmobiles with 20 inch track width, model years 2009-2015.

[453] According to Mr. Larson, "(w)ithin each group all the models have the same chassis, and have the same or very similar track length, overall vehicle length and width" (para 21). It was also provided as evidence a comparison of website images of various models. These images were overlaid. The results found at Appendix 6 of P-42 show remarkable similarities between models grouped according to similar characteristics. In a word, if one snowmobile in a group is shown to infringe on the measurements of the claim, the other snowmobiles in the same group would also be infringing given the similarities of models within the group.

[454] As a way of further assessing the representativeness of the groupings, Mr. Larson considered whatever CADs had been made available by the Defendants (as indicated previously, a complete set of CADs were not provided but some, even partial ones, were available). He observed that "those files that were provided illustrate the fact that the model variations within each chassis group share the vast majority of their components and have little in the way of differences of relevance to the issues of the case." (P-42, para 25) Indeed, according to Mr. Larson, AC had CAD files that, in fact, represent groups of models. There is a particular chassis and then different component assemblies can be used to create different models for a particular chassis. For instance, a different engine becomes a different model, but they both have the same chassis with the same basic configuration.

[455] Faced with what would appear to be powerful evidence, at least at first slush, AC chose to offer evidence that would not be reviewing the groupings in an extensive manner. After all, AC produced and sold the 378 models BRP accuses to infringe its monopoly. It should have been in a position to challenge directly the groupings presented by BRP.

[456] Instead of that, AC called Mr. Mark Warner to testify, among other things, about the report prepared and filed by Mr. Larson. Mr. Warner, also an engineer, with a Master of Science from Brigham Young University, is employed by Collision Safety Engineering. He is evidently an expert in collision safety as his curriculum vitae amply shows; he is also a snowmobile enthusiast.

[457] In his rebuttal report (D-108), Mr. Warner claims difficulty in evaluating whether the Larson's groupings are homogeneous. I was not persuaded. Again, the Defendants take the posture that they should sit back and challenge peripherally groupings that they are capable of reviewing with great precision. They have built the 378 models. They prefer to seek to raise doubts about the groupings made carefully, in spite of evidence that corroborates these same groupings.

[458] Mr. Warner's line of attack is to suggest that "it is not clear on what basis he grouped the snowmobiles at issue." (D-108, para 100). He raises a red-herring, where addressing the groupings, by suggesting that "as noted in my October Report the BRP Patents do not identify any of these structural features of the snowmobiles of the proposed invention as being key to the rider's position." (para 104). At this stage, when we are not yet concerned with the validity of Patents, the focus should rather be whether the proposed groupings capture the accused models.

[459] He suggests that, given the "population" of snowmobiles at issue, there would have been a need for many more exemplars used to establish the representativeness of exemplars compared to the population considered. However, he never seems to account for the analysis performed by Mr. Larson in populating the various groupings and validating that the models have actually the same chassis. The exercise was fully documented in the Larson reports. The statistical analysis suggested by Mr. Warner falls short of the mark. It is ironic that BRP would be faulted for not having purchased more AC snowmobiles to conduct more tests while AC chose not to conduct the same tests. At best, Mr. Darling, for AC, suggested that some of its published material is not always accurate, but without offering evidence as to how prevalent and significant that could be, or indicating what models are affected and to what extent. The issue is not so much to draw a negative inference against the Defendants as it is to note that in the balancing of evidence to assess where the balance of probabilities lies, AC makes general allegations concerning the groupings, is critical of some aspects, without even trying to test its own snowmobiles to show the deficiencies of the Larson method. On the other hand, BRP offers specific evidence, its groupings, that is not challenged with any particularity.

[460] Both Dr. Grewal (D-123, para 71) and Mr. Warner (D-108, paras 109 to 111) were critical of the fact that Mr. Larson seemed to have neglected measuring the snowmobiles' mass. Dr. Grewal spoke of the mass being "conspicuously absent from the charts comparing other physical properties of all of the alleged infringing snowmobiles." Both Mr. Warner and Dr. Grewal noted that mass is an important factor in the centers-of-gravity measurements. As with other criticism however, the experts raised issues but that never went beyond than "raising issues" in a less than conclusive way. It is as if that was an attempt to raise a doubt about the groupings. Without more,

there is a realistic chance that a doubt will ensue, but a reasonable doubt will not suffice in a civil matter. As Lord Denning famously said in *Miller v Minister of Pensions*, [1947] 2 All ER 372, "(i)f the evidence is such that the tribunal can say: 'we think it more probable than not', the burden is discharged, but if the probabilities are equal it is not." The seriousness of the issue does not matter: the standard remains the same. Baroness Hale found that much in *In Re B (Children)* [2008] UKHL 35 where she said that "(n)either the seriousness of the allegation nor the seriousness of the consequences should make any difference to the standard of proof to be applied in determining the facts…" (para 70).

[461] Be that as it may, the matter was met head on by Mr. Larson in his reply report (P-113). In essence, Mr. Larson states that he did not act *per incuriam*, but rather after careful consideration. He chose not to use the weight in defining the groups (the weight would be featured in the measurements of the centers-of gravity in whatever grouping a model would be placed). Three reasons are given.

[462] First, the weight is accounted for in creating the groupings by the size and the length of the snowmobile. Obviously, the groups reflect size and length. For instance, the snowmobiles falling in the "mountain" category end up in two different groups because of two different track lengths.

[463] Second, there are different types of snowmobiles, with inherently varied weights: lightweight performance snowmobiles, multi-use snowmobiles and more rugged touring or utility snowmobiles. The groupings accounted for these varied weights.

[464] Third, the engine size was considered. However, most chassis offer a variety of engine sizes. Thus, intra-group pairs of measurements were conducted, using the smallest and largest options. These types of measurements, we learned in the previous report, show that they are similar. In the uncontradicted view of the expert, the engine size does not change in a significant way the analysis.

[465] The 17 exemplars cover the 9 groups, as delineated by Mr. Larson. Some groupings saw more than one model selected to assess if the group would fall within the ranges of the asserted claims of Patents 106, 813 and 964.

[466] In my opinion, the evidence offered by AC does not challenge effectively the evidence of how the groupings were arrived at by Mr. Larson. The general allegations made do not rise to the level of an effective challenge. As in *Whirlpool*, the evidence of infringement is not completely satisfactory as superior evidence would have been to have access to the CADs to establish infringement or the 378 models could have been measured; perhaps more than 17 exemplars could have been chosen to be more statistically significant. Nevertheless, when available the CADs confirmed some of the groupings, without exception. The weight of the reliable evidence is clearly on the side of the Plaintiff and the balance of probabilities favours BRP. Infringement of the measurements of the Patents-in-suit has been established to the Court's satisfaction.

[467] As a result, all of the measured models fall within the ranges of the following asserted claims:

- 106 Patent: Claims 1, 7, 27 and 77

- 813 Patent: Claims 37, 38, 48 and 73
- 964 Patent: Claims 1, 4, 6, 8, 13, 15, 16, 20, 24, 26, 27, 35, 37, 40, 42 and 48

[468] BRP declares in its final submission relying on the last remaining asserted claims. However, there are limitations:

- 106 Patent: Claim 8, except gr. 7
  Claim 28, except gr. 6 and 9
- 813 Patent: Claim 9
  Claim 39 except gr. 7
  Claim 49 except gr.6 and 9
- 964 Patent: Claim 9, except gr. 3 and 9

[469] Given that the balance of probabilities, in view of the evidence led by BRP concerning the validity of the groupings of the 378 accused models which are found to be homogeneous, evidence which has not been answered by AC, falls in favour of the Plaintiff, it follows that the Court is satisfied that the 378 models infringe the measurements of the Patents-in-suit.

[470] The examination of the infringement of the BRP Patents would be incomplete if BRP does not prove that AC sold snowmobiles in Canada between 2006 and 2014. That is not contested by AC.

[471] During the hearing of this case, counsel for the Defendants very fairly confirms in open court that “we are not contesting infringement by inducement and procurement of infringement by the dealers.” (transcripts, April 14, 2015, p. 143) As a result BRP’s written submissions on the subject did not require to be further asserted in open court. They were not addressed in AC’s

memorandum of fact and law. That concession has of course no bearing on the issues of infringement and validity which were debated at length during the trial.

VI. Validity of Rider Position Patents

[472] As with a large number of patent cases, the Court had to deal with a catalog of arguments concerning the validity of the REV Patents. It is not showing much insight to note that a number of measurements about AC's snowmobiles may well fall within the measurements asserted by BRP in its Patents 106, 813 and 964, yet in order to be successful the Plaintiff must prevail once the validity of the various Patents is challenged. The measurements are one thing and the Patents' validity is another.

[473] It is not disputed that a patent is presumed valid, which signals that the burden is on the Defendants to assert and prove invalidity. Subsection 43(2) of the *Patent Act* states:

Validity of patent	**Validité**
43 (2) After the patent is issued, it shall, in the absence of any evidence to the contrary, be valid and avail the patentee and the legal representatives of the patentee for the term mentioned in section 44 or 45, whichever is applicable.	**43 (2)** Une fois délivré, le brevet est, sauf preuve contraire, valide et acquis au breveté ou à ses représentants légaux pour la période mentionnée aux articles 44 ou 45.

Whether the "presumption" is easy to overcome or not (*Rubbermaid (Canada) Ltd. v Tucker Plastic Products Ltd.* (1972), 8 CPR (2^{nd}) 6) does not really matter since in civil cases the party must satisfy the Court on a balance of probabilities (*F H v McDougall*, 2008 SCC 53, [2008] 3

SCR 41, at para 40) [*McDougall*]. The quality of the evidence to meet the standard requires that "evidence must always be sufficiently clear, convincing and cogent" (*McDougall*, para 46, as recently re-asserted in *Fairmont*, para 36). It is the ultimate standard of balance of probabilities that must be satisfied by AC.

[474] BRP has suggested on occasion that AC's arguments on invalidity were not consistent between them. My view is that these arguments can hardly be treated as if they are watertight compartments. Nevertheless, it is perfectly permissible, as often seen, for arguments to be in the alternative. For instance, I can see nothing wrong with arguing obviousness and insufficiency. In *Eli Lilly Canada Inc. v Apotex Inc.*, 2008 FC 142, 63 CPR (4th) 406, Justice Hughes wrote:

> [74] Thus, one must both advance the state of the art and disclose that advance in order to gain the patent monopoly. Failing to do so, thus invalidating the monopoly, can be in the form of one or more of several matters as such as, the "invention" was not new, or the so-called invention was "obvious" or the disclosure was "insufficient" or "what you disclosed doesn't support the monopoly that you claim".

It is certainly possible for something to be invented but that has not been sufficiently disclosed or properly claimed such that the patent monopoly has to be invalidated.

[475] An examination of each argument on invalidity is the usual way of proceeding. It remains that, in the end, it is the validity of patents that is in play. Here, the parties have largely addressed the various grounds of possible invalidity, but in a markedly different order and emphasis. While AC leads with its argument that the sufficiency of disclosure is deficient, BRP chose to deal at length with anticipation and obviousness.

[476] The Court will review the various grounds of invalidity. In my opinion, the asserted claims of the three Rider Position Patents have not been anticipated and they are not obvious. I have also concluded that the 964 Patent did not suffer from false or misleading statements. However, these Patents are invalid because they fail the adequate disclosure requirement under the *Patent Act*.

[477] I will seek to review briefly the state of the law before proceeding with my reasons.

A. *Anticipation: The Law*

[478] For an invention to exist there must be something new (definition of "invention", s.2, *Patent Act*). A lack of novelty will result in a finding of invalidity. Anticipation means that the claimed invention was already known to the public. Section 28.2 of the *Patent Act* requires:

28.2 (1) The subject-matter defined by a claim in an application for a patent in Canada (the "pending application") must not have been disclosed	**28.2 (1)** L'objet que définit la revendication d'une demande de brevet ne doit pas :
(a) more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant, in such a manner that the subject-matter became available to the public in Canada or elsewhere;	**a)** plus d'un an avant la date de dépôt de celle-ci, avoir fait, de la part du demandeur ou d'un tiers ayant obtenu de lui l'information à cet égard de façon directe ou autrement, l'objet d'une communication qui l'a rendu accessible au public au Canada ou ailleurs;
(b) before the claim date by a person not mentioned in paragraph (a) in such a manner that the subject-matter became available to the public in Canada or elsewhere;	**b)** avant la date de la revendication, avoir fait, de la part d'une autre personne, l'objet d'une communication qui l'a rendu accessible au public au Canada ou ailleurs;

[479] Thus, prior disclosure to the public can take different forms, including prior publication and prior use, as long as the claimed invention has been made available to the public.

[480] Anticipation requires that there is not only a prior disclosure of the subject-matter of the claim, but also enablement of the subject-matter disclosed. These two are considered separately. The process to follow is described in *Apotex Inc. v Sanofi-Synthelabo Canada Inc.*, 2008 SCC 61, [2008] 3 SCR 265 [*Sanofi*], at paragraphs 24 to 27 which are reproduced hereafter:

> [24] In the 2005 decision of the House of Lords in *Synthon*, Lord Hoffmann has brought some further clarity to the law of anticipation as understood since *General Tire*. His reference at para. 20 to the "unquestionable authority" of Lord Westbury in *Hills v. Evans* (1862), 31 L.J. Ch. (N.S.) 457, at p. 463, makes it plain that his analysis does not depend on any change on English law flowing from the enactment of the *Patents Act 1977* (U.K.), 1977, c. 37, or the U.K.'s adoption of the *Convention on the Grant of European Patents*, 1065 U.N.T.S. 199 entered into force October 7, 1977). He distinguishes between two requirements for anticipation that were not theretofore expressly considered separately, prior disclosure and enablement.
>
> [25] He explains that the requirement of prior disclosure means that the prior patent must disclose subject matter which, if performed, would necessarily result in infringement of that patent, and states, at para. 22:
>
> > If I may summarise the effect of these two well-known statements [from *General Tire* and *Hills v. Evans*], the matter relied upon as prior art must disclose subject matter which, if performed, would necessarily result in an infringement of the patent. . . . It follows that, whether or not it would be apparent to anyone at the time, whenever subject matter described in the prior disclosure is capable of being performed and is such that, if performed, it must result in the patent being infringed, the disclosure condition is satisfied.
>
> When considering the role of the person skilled in the art in respect of disclosure, the skilled person is "taken to be trying to understand what the author of the description [in the prior patent] meant" (para.

> 32). At this stage, there is no room for trial and error or experimentation by the skilled person. He is simply reading the prior patent for the purposes of understanding it.
>
> [26] If the disclosure requirement is satisfied, the second requirement to prove anticipation is "enablement" which means that the person skilled in the art would have been able to perform the invention (para. 26). Lord Hoffmann held that the test for enablement for purposes of anticipation was the same as the test for sufficiency under the relevant United Kingdom legislation. (Enablement for the purposes of sufficiency of the patent specification under the Canadian *Patent Act*, s. 34(1)(b) of the pre-October 1, 1989 Act, now s. 27(3)(b), is not an issue to be decided in this case and my analysis of enablement is solely related to the test for anticipation. The question of whether enablement for purposes of sufficiency is identical in Canada is better left to another day.)
>
> [27] Once the subject matter of the invention is disclosed by the prior patent, the person skilled in the art is assumed to be willing to make trial and error experiments to get it to work. While trial and error experimentation is permitted at the enablement stage, it is not at the disclosure stage. For purposes of enablement, the question is no longer what the skilled person would think the disclosure of the prior patent meant, but whether he or she would be able to work the invention.

I note that the experimentation by the skilled person that would be needed to make or perform the invention must be without an undue burden (paras 33 and 35, *Sanofi*).

[481] By every account, the test to meet for anticipation is a high one, one that is difficult to meet in the words of the Supreme Court in *Free World Trust*, where the Court quoted with approval this famous passage, from *Beloit Canada Ltd. v Valmet OY* (1986), 8 CPR 3d 289 [*Beloit*] , at p. 297:

> One must, in effect, be able to look at a prior, single publication and find in it all the information which, for practical purposes, is needed to produce the claimed invention without the exercise of any inventive skill. The prior publication must contain so clear a direction that a skilled person reading and following it would in every case and without possibility of error be led to the claimed invention.

It is only the mechanical skills that are required, not inventiveness.

[482] Anticipation by publication is difficult to establish because 20-20 hindsight is not acceptable (*Free World Trust*, para 25). The two basic requirements for anticipation (prior disclosure and enablement) are also found in anticipation by prior use. In *Baker Petrolite Corp v Canwell Enrio-Industries Ltd.*, 2002 FCA 158, 17 CPR (4th) 478, [2003] 1 FC 49 [*Baker Petrolite*], the Court of Appeal writes:

> [35] I accept that, at a broad level, the principles in *Beloit v. Valmet, supra*, and *Free World Trust, supra*, relating to anticipation by prior publication are also applicable to anticipation by prior use or sale. For example, the evidence of anticipation by prior public use or sale, as well as by prior publication, should be subjected to close scrutiny. However, below a certain level of generality, the principles governing anticipation by prior publication may need to be tailored to fit the particular characteristics of anticipation by prior public use or sale. For example, the principle that the prior publication must contain so clear a direction that a skilled person reading and following it would be led, without error, to the invention claimed, applies to the specific context of prior publication. In the case of prior publication, the skilled person will read the publication. In the case of prior use or sale, reading may not be relevant. When faced with having to decide whether there has been anticipation by disclosure through prior use or sale under paragraph 28.2(1)(*a*), it is necessary for the Court to have regard to the circumstances of prior use or sale, in order to determine how a person skilled in the art might be led, without error, to the invention claimed. For example, was there an analytical method available at the relevant time to lead a skilled person to the invention? The United Kingdom authorities provide useful guidance in this respect.

[483] The question is, of course, what will constitute becoming "available to the public in Canada or elsewhere", in the words of paragraphs 28.2(1)(a) and (b). Referring to a decision of the House of Lords, the Court of Appeal is satisfied that the use of the invention must make available the information that describes the invention. That appears to be what is referred to as "enabling

disclosure". The Court quotes with approval *Lux Traffic Controls Ltd. v Pike Signals Ltd. and Faronwise Ltd.*, [1993] RPC 107, where it is stated at p.133:

> It is settled law that to invalidate a Patent a disclosure has to be what has been called an enabling disclosure. That is to say the disclosure has to be such as to enable the public to make or obtain the invention.

[484] *Baker Petrolite* goes on to discuss the sale of the product. It makes the point that the sale of the product to even one person constitutes making available to the public. That is because the new owner of the product destroys the secrecy. If the public has the secret, there is no secret anymore: it follows that the inventor is not giving anything to the public and is thus not entitled to anything in return, that is a monopoly for a number of years.

[485] If reverse engineering is necessary to discover the invention, the acquisition by any member of the public, who is therefore free to use it as she pleases, will be enough to be made available to the public. This is not new law. Lord Parker C.J. stated in *Bristol-Myers Co.'s Application*, [1969] RPC 146, close to 50 years ago that "…if the information… has been communicated to a single member of the public without inhibiting fetter that is enough to amount to a making available to the public…" (p. 155).

[486] What needs to be stressed is that the disclosure must be an enabling disclosure, that is a disclosure that enables the public to make or obtain the invention. Once an invention has been sold, the acquirer is free to examine it and discover the invention.

[487] When the invention is not acquired such that an examination cannot be easily performed in order to have an enabling disclosure, it will prove difficult to establish disclosure by prior use. A case in point may be *Easton Sports Canada Inc. v Bauer Hockey Corp,* 2011 FCA 83; 414 NR 69; 92 CPR (4th) 103 [*Bauer*]. In that case, one of the issues was whether there was anticipation in view of the use of a patented (hockey) skate boot during Test League games where the teams were composed of Bauer employees and others covered by a confidentiality agreement. However, the games were open to the public. Easton's argument was that a person of skill, being present as a spectator, would have been able to observe the skates and being able to identify the essential elements of the invention.

[488] Given that the skates were not available for testing and dismantling, the skilled person merely attending games "would not have been able to discern all the essential features of the invention". As a result, the invention "was neither disclosed nor enabled, and thus not anticipated".

[489] The Court of Appeal affirmed:

> [65] Easton submits that the Trial Judge failed to view the Vapor 8 prototype tested during the Test League from the perspective of the person skilled in the art willing to understand and with the relevant common general knowledge in mind. It contends that from the perspective of such a person, a visual inspection of the Vapor 8 prototype was "more than sufficient to bring to mind the salient aspects of the inventive concept: the one-piece quarter, the angular profile and the separate tendon guard attached side-by-side" (Easton's memorandum at para. 58). The issue is thus whether the essential elements of the '953 Patent would have been revealed to the person skilled in the art attending a Test League game and observing the skates worn by the participants.
>
> [66] I pause here to say that the term "visual inspection" used by Easton as well as by the Trial Judge throughout her reasons is somewhat misleading in that it suggests that the skates were available for "careful scrutiny" or "close examination" (see the

> definition of "inspection", *Shorter Oxford English Dictionary*, Clarendon Press Oxford, Third Edition). They were not. As the Trial Judge makes clear, the skates were not available for testing (Reasons at para. 216) and the evidence shows that they could only be observed by persons attending the games as spectators or by persons coming onto or leaving the ice surface at the beginning and at the end of each game (Cross-examination of Mr. Langevin, Appeal Book, Vol. 41, pp. 15620-15624).

[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.

[491] Finally, relying on *Conway v Ottawa Electric Railway Co.* (1904), 8 ExCR 432 [*Conway*], BRP argues that there is a further exception to anticipation where the public use is of an experimental nature. According to that authority, the experimentation must be reasonable and necessary for the purpose of perfecting or testing:

> 6 The issue as to the public use of the invention at the City of Quebec with the plaintiff's consent and allowance for more than one year previous to the date of his application, presents, I think, much greater difficulty. That the invention was used in public for a time longer than that allowed by the statute is beyond question. That is not denied. But it is said that the use made in the winter of 1899-1900 of the ploughs constructed under the plaintiff's instructions and in accordance with his invention, was, experimental, and that such use though public, is not to be reckoned against him; that it does not defeat his patent; that he had a year after his invention was perfected, and the second ploughs were turned out, in which to apply for his patent; and that he made his application within that time. It is well settled, it seems to me, as well in Canada as in England and the United States, that the use of an invention by the inventor, or by other persons under his direction by way of experiment, and in order to bring the invention to perfection, is not such a public use as under

> the statute defeats his right to a patent. But there must be experiment, and what is done in that way in public must be reasonable, and necessary, and be done in good faith for the purpose of perfecting the device or testing the merits of the invention, otherwise the use in public of the device or invention for a time longer than the stature prescribes will be a dedication of it to the public; and when that happens the inventor cannot recall his gift, and no afterthought will avail him.

[492] *Conway* would appear to be good law still. Recently, as high an authority as Justice Roger Hughes, in *Bayer Inc. v Apotex Inc.*, 2014 FC 436, found that one of the considerations under paragraph 28.2 (1)(a) of the *Patent Act* was, once disclosure had been found, whether it is exempted because it is experimental (para 116). Indeed, Justice Hughes relied on *Conway*:

> [119] However that does not end the matter. The law in Canada has long been established that experimental use in order to bring the invention to perfection, does not constitute public use e.g. *Conway v Ottawa Electric Railway Co.*, (1904), 8 ExCR 432 at 442; *Gibney v Ford Motor Co. of Canada*, [1967] 2 ExCR 279 at para 49 in citing *Elias v Grovesend Tinplate Co.* (1890), 7 RPC 455 at 466. This applies in particular where, of necessity, the experimental use must be conducted in public.

B. *Anticipation: application to the facts*

[493] AC argues that there is with respect to Rider Position Patents anticipation by prior art snowmobiles as well as one prior art patent.

[494] The Yamaha 503 Patent (U.S. Patent No. 4, 848, 503) is argued by AC as anticipating the Rider Position Patents asserted in this case. The US 503 Patent is entitled “Small Snowmobile and Drive Arrangement Therefor”. This is not a Patent concerned with the configuration of a

snowmobile. In fact, the Patent makes the difference between "conventional snowmobiles" and a "small lightweight snowmobile"; this small snowmobile accommodates one rider only. In contradistinction to conventional snowmobiles, "there is an interest in a smaller lighter machine that can be conveniently operated and used by a single person". It is the type of vehicle in which the 503 Patent is interested. The 503 Patent does not seek to build a new version of the conventional snowmobile. It relates to a small light weight vehicle for which a power unit must be adapted. It is readily apparent that the invention has as the principal object, "to provide a small snowmobile design which is capable of being powered by the engine variable speed drive of the type normally used in a motor scooter." (Column 1).

[495] Not only is the 503 Patent about a small snowmobile as opposed to a snowmobile or a conventional snowmobile, but one cannot find in the Patent any reference to parameters for its configuration (center of gravity, distances, angles, 50^{th}-percentile, or other measures) or other essential element such as a tunnel. At best, we note a reference to "(a) seat carried by the frame rearwardly of the body position…" (Column 2) AC relies on the 164 Patent (U.S. Patent 4, 892, 164), which is concerned with the frame and body construction for a small snowmobile. It is incorporated by reference to the 503 Patent through a reference to patent application 163,389, which became US Patent 164. However, that frame is of tubular welded type: there is no tunnel which is part of the frame, as in the REV Patents. Instead, AC asserts that "(t)he tunnel was made of tubing" (memorandum on validity, para 478).

[496] It is not easy to see how the 503 Patent can anticipate the REV Patents as it does not teach all the elements of the claim in issue. It can be even argued that it does not teach any, as it is

concerned with something completely different. It would appear that expert Warner, for AC, was taken by figure 1 of the 503 Patent where the rider, on that small snowmobile powered by a motor scooter, is presented as having hips above knees, ankles behind the knees and knees above ankles. From that, Mr. Warner makes a number of assumptions and estimates to arrive at some measurements that he claims fall within a number of claims of the three Rider Position Patents. That is not clear and convincing evidence which will prove invalidity on a balance of probabilities.

[497] Thus, Mr. Warner assumes that the rider is of the 50th-percentile male. He estimates a location for the center of gravity of the snowmobile and of the system (rider and snowmobile). The weight of the rider is that associated with the 50th-percentile male, but he estimates the 503 Patent snowmobile to weigh 120 kg. Other than stating that the inventor creates a small snowmobile, there is no indication in the 503 Patent of the weight of a small snowmobile. The expert also had to estimate the seat position, the location of the steering position and the footrest position. From these estimates taken from figure 1, Mr. Warner conducted angular measurements as well as assessing distances.

[498] It is worth repeating what is required to establish anticipation by publication. The single publication must contain sufficient information to enable the skilled person to understand "the nature of the invention and carry it into practical use without aid of inventive genius but purely by mechanical skill" (from *Free World Trust*, para 26, quoting from H.G. Fox, *The Canadian Law and Practice Relating to Letters Patent for Inventions* (4th ed 1969)). The test quoted favourably in *Free World Trust* is that of *Beloit Canada Ltd.*, is reproduced again for ease of reference:

> One must, in effect, be able to look at a prior, single publication and find in it all the information which, for practical purposes, is needed

> to produce the claimed invention without the exercise of any inventive skill. The prior publication must contain so clear a direction that a skilled person reading and following it would in every case and without possibility of error be led to the claimed invention.

The demonstration that would satisfy this test has not been made. The information used is derived from a rough figure in a patent which is concerned with the tubular design of a small snowmobile and its power unit and driving belt. The information is not found in the single publication: it is at best estimates and assumptions. The expert went so far as to go completely outside the single publication by estimating distances by using the specifications of the SnoScoot which is said by the expert to be assumed to embody the invention described in the 503 Patent (report of Mark Warner, D-106, para 262).

[499] But there is more. By definition, the 503 Patent is about an invention that "relates to a small snowmobile and a drive arrangement therefor and more particularly to an improved power unit and transmission mechanism for a small snowmobile." (Column 1) It distinguishes itself from snowmobiles sold that are very large and are designed to accommodate more than one rider. The 503 Patent is not about a typical snowmobile. It is meant to be atypical.

[500] Furthermore, there is no tunnel in the 503 Patent, only a tubular structure. A seat support made of tubes is not the tunnel of the REV Patents.

[501] Finally, I note that the prosecution history of the three REV Patents acknowledges the existence of the 503 Patent, yet the examiner did not stop the journey.

[502] As a result, the anticipation by publication, through the U.S. 503 Patent, has not been shown on a balance of probabilities.

[503] AC also sought to argue anticipation by actual snowmobiles prior to December 1998. AC claims that there were snowmobiles in public use that had the structural features of the REV Patents such that the 50th-percentile male would be seated on the snowmobile in a manner that fulfilled the measurements of the claims asserted in this case.

[504] There are 6 vehicles that are presented as anticipating:

- SnoScoot
- Blade
- Trail Cat
- Twin Track
- T/S
- Hetteen

These vehicles are also said to be relevant to the obviousness analysis.

[505] In effect, AC relies on measurements made on the 6 prior art snowmobiles to argue that if they fit measurements asserted in the three REV Patents, there would be *ipso facto* anticipation of the new configuration of a snowmobile that is the subject matter of the invention. Dr. Grewal, for AC, tried to measure an ATD representing the 50th-percentile male once seated on the 6 prior art snowmobiles. It is therefore crucial that the measurements performed by Dr. Grewal have themselves validity.

[506] Dr. Grewal pretends that there are problems associated with designing a protocol to determine whether the prior art snowmobiles fall within the measurements of the BRP Patent claims. Even if that were the case, that would not begin to explain why Dr. Grewal positioned the ATD on all 6 prior art models well forward of a biomechanically neutral position or the standard rider in a standard position. It is obvious to anyone having a quick look at the photographs taken by Dr. Grewal to document his measurements, that the ATD is always positioned in an extreme fashion that could not correspond to anything close to the biomechanically neutral position called for by the REV Patents. He was asked to put the ATD in a full-forward position (expert report of Dr. Grewal, D-121, para 53); that is in spite of the fact that the measurements must be taken in accordance with the teachings of the Patents or, at the very least, with an ATD positioned in a reasonable fashion in view of the Patents, including the figures. In fact, a person of skill would have sought to gain an understanding of what constitutes a biomechanically neutral position, or the standard position of the standard rider. The full-forward position favoured by Dr. Grewal does not even approach, in my view, a reasonable positioning once is factored in the requirement of a biomechanically neutral position.

[507] The positioning of the ATD was fully documented by Dr. Grewal. (D-121, Exhibit K) There is no doubt, in the eyes of this Court, that the positioning is evidently chosen for a particular purpose. Mr. Larson, for BRP, notes in his Report in response to the challenge to the validity of the REV Patents that the ATD was positioned as far forward as possible on the 6 prior art snowmobiles. Mr. Larson commented accurately in my view on what results from the positioning chosen by Dr. Grewal: “In this position, the legs of the ATD are splayed on either side of the fuel tank, rather than against the sides of the seat as defined in the ATD Positioning Guidelines. The

arms of the ATD are also sent to extreme angles, with elbow angles exceeding 90 degrees rather than between 20 and 40 degrees as defined in the ATD Positioning Guidelines." (P-110, para 24) If one has to pick between Mr. Larson and Dr. Grewal, one has only to consider exhibit K of D-121. In effect, Dr. Grewal is positioning the ATD, for all intents and purposes, as if the rider was "riding the tank". This is not the standard position: it is rather an aggressive position. There is no direct evidence as to what difference in the measurements the positioning chosen by Dr. Grewal created compared to standard positioning. But that extreme positioning was chosen. One can only suspect that the difference with a more standard position is material.

[508] For the purpose of establishing the configuration of a snowmobile that would lead to the conclusion that the configuration of one meets the measurements of the other, the two sets of measurements must be for equivalent positioning. Without that, there is no way of making a comparison, let alone reaching a conclusion that one anticipates the other on the sole basis of measurements.

[509] BRP has sought to fault Dr. Grewal for his choice of ATD. It seems that the pedestrian ATD used by Dr. Grewal has unrestricted upper leg position compared to the more limited movement allowed by the seated ATD used by Mr. Larson. I do not accept BRP's criticism of the choice of ATD. The fact that the legs may be more easily splayed in the case of the pedestrian ATD used by Dr. Grewal is in my view largely irrelevant. What counts is the position in which the ATD is placed. If the type of ATD allows to put it in an extreme forward position, that does not result in allowing that it be done. I agree again with Mr. Larson who said that "it is possible to position the pedestrian ATD in an unnatural position which is susceptible to negatively affecting

the reliability of the results obtained, and that is exactly what Dr. Grewal did". (P-110, para 29) He followed the instructions received by AC, but in so doing the reliability, and the value to this Court, of the measurements made disappeared. It was of course AC's burden to, on a balance of probabilities, satisfy the Court that the measurements taken of the 6 prior art snowmobiles showed anticipation of the REV Patents' claims. Without reliable measurements taken with a reasonably positioned ATD, that demonstration fails.

[510] For good measure, BRP argues that the ATD in Dr. Grewal's measurements of the centers of gravity moved around; when tilted, the platform on which the snowmobiles were mounted, such that the snowmobile may be tilted forward and rearward. Mr. Larson asserted a shift of "as much" as 0.8 inches. In my view, this becomes secondary as the more problematic issue is the positioning of the ATD on the 6 prior art snowmobiles.

[511] It follows that the only data available is that which come from the measurements of Mr. Larson. That is the only evidence left before the Court. As a result, the following claims have been proven, on this record, to have not been anticipated by the following prior art snowmobiles without even having to discuss any further at this stage the construction of these vehicles:

Blade

106 Patent		813 Patent	
Claims:	1 and 7 27 77	Claims:	9 37 and 38 48 73

964 Patent

Claims:	1 and 4 6 24 27 35 8 and 9 13 16 40 42 48

Hetteen

106 Patent		813 Patent	
Claims:	27	Claims:	48

964 Patent

Claims:	1 and 4 6 24 27 35 8 and 9 13 16 40 42 46

Trail Cat

106 Patent

Claims: 1 and 7
27
77

813 Patent

Claims: 9
37 and 38
48
73

964 Patent

Claims: 1 and 4
6
24
27
35
8 and 9
13
16
40
42
48

SnoScoot

106 Patent

Claims: 1 and 7

813 Patent

Claims: 37 and 38

964 Patent

Claims: 24
27
35
13
40
42
48

(memorandum of fact and law, BRP, paras 722, 730, 731, 744)

[512] As for the 1991 T/S and the Twin Track oval ice snowmobile, I agree with the Plaintiff that they are not snowmobiles as intended in the claims of the asserted Patents. They are not the kind of snowmobile that could be considered together with the REV, as their construction, from the simple visual examination of them, clearly is targeted at a different purpose: they are racing machines built for oval racetracks where the vehicle turns left (counter-clockwise). As the evidence showed, they don't ride on snow, as they are built to race on ice, and uneven surfaces such that bumps and trails are to be excluded. They have an asymmetrical construction, the idea being that they are built to take the turns to the left at high speeds. The rider sits off the center of the vehicle in order to counterbalance when the vehicle turns.

[513] I accept the evidence of Gerard Karpik, for BRP, who reports that the T/S and Twin Track do not carry skis but rather sharp blades created to acquire good traction on the tracks' icy surfaces. If ridden on bumpy trails, the blades sink in the snow. He testified that if an attempt were made to turn right at high speed, these vehicles flip over due to the particular suspension's geometry. Indeed, the small travel of those suspensions was described as making them unsuitable for riding over bumps and generally rough terrain (P-121).

[514] To top it off, the Twin Track has obviously two tracks.

[515] In my view, the Arctic Cat T/S and the Bombardier Twin Track provide no useful information either for anticipation or obviousness, as the Court was urged *in fine* in the oral argument (transcripts, April 16, 2015, p. 141). I will comment further in the part of the reasons

dealing with obviousness. In my view, these two machines are, as suggested by Mr. Larson, not relevant here.

[516] As for the Hetteen and the SnoScoot, they are deficient in another way. The Hetteen was a vehicle developed by Edgar Hetteen, the founder of Arctic Cat. For the purpose of the anticipation argument, AC conceded that it could not rely on this machine because it does not have a seat disposed on the tunnel (transcripts, April 16, 2015, p. 151). Still AC would wish for the Hetteen to be considered towards obviousness. Some observations are nevertheless apposite at this stage. The evidence concerning the availability of the Hetteen comes from David Karpik, for AC, who recalled seeing the snowmobile in the late nineties when he visited Edgar Hetteen (D-99). His brother, Gerard Karpik, for BRP, who is also extremely familiar with the snowmobile industry, testifies that he had never seen the Hetteen until 2013 when his brother brought it into their shop where, according to his testimony of March 24, 2015, he saw an older looking vehicle in the garage area. It is less than clear that this vehicle was ever available to the public in Canada or elsewhere. Moreover, when one considers the photographs of the Hetteen in Mr. David Karpik's report (exhibits V and W) or in Dr. Grewal report (D-121, exhibit K), it is virtually impossible to even suggest that the Hetteen would have been disclosing the invention of a new configuration. It was evidently old-school.

[517] Furthermore, the Hetteen can be described as a hybrid between a snowmobile and a motorcycle (Mark Warner, AC's expert, transcripts, March 11, 2015, p. 62). With the "gear shifter" and the break lever at the feet, Mr. Warner conceded that the Hetteen "is not a regular

snowmobile". Mr. Cowley also agreed that the Hetteen "looks like – a lot like a motorcycle" (transcripts, March 4, 2015, p. 194).

[518] In my view, the Hetteen is of no use to this Court for the purpose of anticipation and even obviousness.

[519] The SnoScoot, manufactured by Yamaha, has its significant deficiencies too. It is not disputed that the 503 Patent is for the SnoScoot. The 503 Patent establishes clearly that it is interested by a small snowmobile, distinguishing it from large snowmobiles, because "there is an interest in a smaller lighter machine that can be conveniently operated and used by a single person." (503 Patent, column 1) I accept the evidence of Gerard Karpik, who has extensive experience in snowmobile design, including the design of the Blade, who stated emphatically that the SnoScoot did not provide any inspiration as he was designing the Blade. He wrote: "As the designer of a frame for an adult snowmobile, I would not seek inspiration from the SnoScoot mini snowmobile because it is a small snowmobile designed for children up to 12 years old." (P-121, para 64) "If the snowmobile to be improved by the REV Patents is the snowmobile to be used on trails and over bumps at high speed, there was nothing to learn from the SnoScoot." (P-121, para 65).

[520] Furthermore, the SnoScoot, as the 503 Patent, does not show a tunnel. An open structure used to support a seat does not become a tunnel because the tunnel of the REV Patents also supports a seat. In the case of the SnoScoot, it protects the rider from the snow through some plastic track guard which would not add rigidity to the structure, while the REV Patents all require

a frame including a tunnel. The seat of the SnoScoot is on a structure made out of tubes, an open structure that does not prevent the snow from the track to reach the rider.

[521] AC's argument on anticipation is that, if the measurements obtained through Dr. Grewal's methodology carry weight, there is at least one prior art snowmobile that anticipates every asserted claim. However, I have concluded that the evidence never rises to the balance of probabilities. First and foremost, the measurements of Dr. Grewal cannot be used in view of the position in which he was instructed to put the ATD he used for the purpose of the measurements. The extreme forward position cannot comply with the requirements of the REV Patents. It does not even attempt to account for the biomechanically neutral position (or standard rider in a standard position). This is a fatal flaw. The reliance on an understanding that snowmobile riding is a dynamic sport to adopt varying riding positions was also misplaced; it may have contributed to the misapprehension of the riding position taught by the Patents-in-suit. As a result, the measurements used by AC cannot carry any weight and they cannot support a case for anticipation that must be on a balance of probabilities. The evidence was neither clear nor convincing. It was absent.

C. *Obviousness: the law*

[522] It is section 28.3 of the *Patent Act* which requires that an invention must not be obvious on the claim date:

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	**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) information disclosed more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant in such a manner that the information became available to the public in Canada or elsewhere; and	**a)** qui a été faite, plus d'un an avant la date de dépôt de la demande, 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) 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.	**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.

The obviousness is to be appreciated through the expertise of the person skilled in the art. The Court will, of course, consider the invention as claimed.

[523] As with anticipation, the burden is on the shoulders of the party which claims obviousness and that party must satisfy the Court on a balance of probabilities. While anticipation relates to a lack of novelty, obviousness is concerned with a lack of inventiveness. It is a question of fact tested independently for each claim.

[524] It is in *Sanofi* that the Supreme Court, borrowing from an English case, developed a four-step approach in order to bring better structure to the obviousness inquiry. That is also aimed at bringing more objectivity and clarity. The passage is quoted in most patent decisions where obviousness is alleged. It is reproduced here for ease of reference:

> [67] …
>
> 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 steps which would have been obvious to the person skilled in the art or do they require any degree of invention?
>
> [Emphasis in the original]

[525] Secondary factors can be used by the Court to determine if the invention is obvious. The following, taken from *Jay-Lor International Inc. v Penta Farm Systems Ltd.*, 2007 FC 358, 59 CPR (4^{th}) 228, appears to be a good exposé of the state of our law:

> [91] Finally, I would like to address the factors related to obviousness. A number of these were outlined by Justice Décary in *Diversified Products Corp. v. Tye-Sil Corp.* (1991), 35 C.P.R. (3d) 350 (F.C.A.). In *Wessel v. Energy Rentals Inc.*, 2004 FC 791, 253 F.T.R. 279, [2004] F.C.J. No. 952 at para. 22 (F.C.) (QL), this Court set out a number of relevant considerations. In considering the question of obviousness and based on the evidence before me in this case, I would adopt the following factors as relevant:
>
> 1. Was the invention novel and superior to what was available prior to the invention? Before the introduction of the JAY-LOR vertical feed mixer, no mixer had a sloped top to its auger. Further, it is clear from the evidence that the sloped top assisted in preventing jamming of large hay bales.
>
> 2. Has the invention been, since its introduction to the market, used widely and in preference to alternative devices?

Immediately upon its introduction, JAY-LOR sales of vertical feed mixers increased dramatically.

3. Did competitors as well as experts in the field ever think of the combination? There was no evidence before me that the combination of the elements of the JAY-LOR vertical feed mixer was ever considered. This factor is addressed in detail under the heading of "Anticipation" below.

4. Was there amazement expressed by the community at its first publication? Mr. Carl Alexander, who works for a dealer in agricultural machinery in Alabama, spoke of his early exposure to the patented invention. In his testimony, Mr. Alexander described his initial response to the redesigned mixer as, "I didn't think it would work." Once convinced that the design would work, Mr. Alexander used the slope top auger feature as a selling point. While this may not qualify as "amazement" on the scale of – for example – the invention of penicillin, it is certainly an indication that the invention came as a surprise to and was appreciated by the community in which the vertical feed mixer is sold.

5. Did the invention enjoy commercial success? The success of the invention can be measured concretely by the increase in the sales of JAY-LOR vertical feed mixers after they were introduced to the market.

6. Has there been imitation of the invention since its introduction? The evidence is that other manufacturers of vertical feed mixers re-designed their products to include a sloped top to the auger. According to the testimony of Mr. Tamminga, two of JAY-LOR's competitors – Lucknow and Patz – began marketing mixers with sloped tops. After being alerted to JAY-LOR's patent, both changed their design. One other manufacturer, Kuhn Knight, initially went to sloped top and has now developed and patented an off-set auger to achieve the same functionality.

7. Did the inventor come easily to the invention? Mr. Tamminga testified that he worked on the problem for almost two years, trying a number of designs before he accidentally stumbled on the solution of an inclined auger post top. He developed a number of prototypes of the new version of the vertical feed mixer.

[92] In summary, the JAY-LOR vertical feed mixer was an invention that was not intuitive, that took significant time and effort to

> develop, that demonstrated immediate commercial success and that was copied by competitors. Cumulatively, the effect of these factors is "simply irresistible" (*Beloit,* above at 296); the patent was inventive and not obvious. Stated in words that mirror those of Justice Hugessen in *Beloit*, above, the mythical creature (the man in the Clapham omnibus of patent law) would not, in the light of the state of the art and of common general knowledge as at the claimed date of invention, have come directly and without difficulty to the solution taught by the patent. The claim of obviousness fails and the '092 Patent is not invalid by reason of obviousness.

[526] The person of skill is not the inventor. He is a good technician, but without inventiveness or imagination who will come directly and without difficulty to the invention:

> The test for obviousness is not to ask what competent inventors did or would have done to solve the problem. Inventors are by definition inventive.The classical touchstone for obviousness is the technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right. The question to be asked is whether the mythical creature (the man in the Clapham omnibus of patent law) would, in light of the state of the art and of common general knowledge as at the claimed date of the invention, have come directly and without difficulty to the solution taught by the patent. It is a very difficult test to satisfy.
>
> *Beloit,* p. 294

D. *Obviousness: application to the facts*

[527] In my view, obviousness has not been shown on a balance of probabilities.

[528] As I understand it, the AC argument turns largely on the identification of the inventive concept. That is what the essence of the invention is. The argument on obviousness was less than fulsome, both in AC's memorandum and during oral argument. It seems to boil down to two things:

a) If the inventive concept is the repositioning of the rider and the redesign of the snowmobile, AC complains that they are neither described or claimed clearly. It follows, goes the argument, that the inventive concept cannot be determined.

b) If the inventive concept is that presented by expert Breen, there would not be anything inventive.

Neither proposition is convincing as establishing obviousness. But it may point in the direction of the real deficiency of the Patents-in-suit as the first argument seems to merge with arguments about the quality of the disclosure.

[529] I begin with the second argument. AC offered as Mr. Breen's presentation of the inventive concept the following at paragraph 1019 of its memorandum on validity:

> 1019. Mr. Breen argues that the inventive concept of the Rider Positioning Patents can be described as follows:
>
> (a) 106 Patent – a center of gravity of the system (rider and snowmobile) that is closer to the center of gravity of the snowmobile
>
> (b) 813 Patent – relationship between the seating position steering position and footrest position where Alpha (the angle at the seat position) is greater that Beta (the angle at the footrest position) which is greater that the angle Gamma (at the steering position). According to Mr. Breen the conventional configuration had Gamma as the largest angle.
>
> (c) 964 Patent- an active rider position with the rider's hips above his knees and ankles behind his knees

[530] That characterization allowed AC to argue that there is therefore nothing inventive in the three REV Patents. The triangular relationship was known. The angular relationship was known (in the Hetteen and the SnoScoot). The idea of centralizing mass was known. The importance of centers gravity was known.

[531] The problem with this argument is that it mischaracterizes the inventive concept offered by Mr. Breen. Instead of using the definition of the inventive concept offered by expert Kevin Breen for BRP, the argument on obviousness is limited to the angles and measurements. Thus, Mr. Breen wrote in paragraph 277 of P-114 what he considers is disclosed and claimed:

> [277] In my opinion, the 106, 813 and 964 Patents each disclose an inventive concept:
>
> (a) The 106 Patent discloses and claims a particular snowmobile configuration in which the center of gravity of the standard rider is closer to the center of gravity of the snowmobile as compared to conventional snowmobiles (see paragraph [28] of my first report);
>
> (b) The 813 Patent discloses and claims a particular snowmobile configuration in which a steering position, footrest position and seat position define a triangle having specific ranges of angles. This patent specifically references the geometric angles and triangle between various components of the snowmobile and the rider. (see paragraph [34] of my first report); and
>
> (c) The 964 Patent discloses and claims a particular configuration of snowmobile in which the hips, knees and ankles of the rider are positioned relative to one another differently than on a conventional snowmobile (see paragraph [43] of my first report).
>
> [My emphasis]

[532] As is rather obvious, the notion of configuration is dropped from paragraph 277 of P-114 in AC's characterization of Mr. Breen's inventive concept. Based on the alteration made to the inventive concept, AC argues that the centralization of masses and the various angles and measurements would have been known. There was no invention in advancement of the art. AC evidently relied on Mr. Breen's cross-examination where he was asked at different times about his inventive concept being the change in the center of gravity, the triangular relationship between

steering position, seating position and footrest position, and the more aggressive riding position (ankles, knees, hips). I did not take then, and I do not take now, that in so doing Mr. Breen was abandoning the fundamental position that the inventive concept was the reconfiguration of a snowmobile that would be exemplified by the centralization of the masses, the relationship between these positions (seating, steering, footrest) and the position of ankles, knees and hips. He was simply "cutting to the chase", during the cross-examination, using the short cut presented by Counsel, the new reconfiguration of a snowmobile for each invention being a function of one of the three sets of relationships (centers of gravity for the centralization of masses, the various positions relationship, and the position of the ankles, knees and hips). AC chose to rely on its leading questions on cross-examination to argue that, somehow, Mr. Breen had relented from the written words to exclude from his definition of "inventive concept" of the three Patents that which is at the heart of the three inventions: "(t)he present invention concerns the overall design and construction of a snowmobile" (first sentence under Field of the Invention in the three Patents). In my view, Mr. Breen did not, in cross-examination, abandon the very foundation of the Patents-in-suit. BRP and Mr. Breen have insisted throughout that the invention is a snowmobile, a reconfigured snowmobile. It is not a set of measurements. The cross-examination did not change anything.

[533] AC was also relying on the measurements made by Dr. Grewal in general support of its obviousness argument. However, as already found, these measurements are of no assistance given the choice made to measure an ATD in a position that cannot be biomechanically neutral, or that of a standard rider in a standard position.

[534] In my estimation, there cannot be any doubt that the three inventions are about a new configuration of a snowmobile. The better question is whether the three Patents disclose the invention and what is needed in order to implement the invention, to put the invention into practice having only to read the Patent. That will be the subject of a separate section in these reasons for Judgment.

[535] BRP is right that AC's demonstration falls short of showing that each claim at issue has been independently tested. Nevertheless, AC's argument is in fact that it is more or less self-evident that the invention is nothing new given the prior art.

[536] The invention here is a new configuration of a snowmobile, its new design and construction. The Blade and the Trail Cat are not disputed as being snowmobiles. It is rather that the evidence shows that they are in a conventional prior art position. I would have made the same finding concerning the Twin Track, the Hetteen and the T/S: it is impossible to suggest successfully that they could have been even an inspiration for the three Patents-in-suit (see exhibit K of Dr. Grewal's report, D-121 which presents side views of the 6 prior art vehicles). At any rate, the T/S and Twin Track are designed for oval ice racing circuits which have been shown to be very different from the snowmobiles contemplated by the REV Patents. The Hetteen was described by Mr. Breen as not being a snowmobile being rather a "snow bike" (P-114, para 284). That makes it something rather unique; it does not even come close to the snowmobile of the REV Patents. We are, in my estimation, a long distance away from the Hetteen, and other prior art, to the REV. The fourth element of the *Sanofi* test for obviousness requires the differences between the prior art and the invention to be steps which would be obvious to the skilled person or would not require a

degree of invention. There was no evidence of a persuading nature that was offered by AC to that effect.

[537] The SnoScoot, the 503 Patent and the Honda Patent are all small vehicles that could hardly be the inspiration for the snowmobile contemplated by the invention. It is not necessary to discuss at any length the Honda Patent. I accept fully the comment made by Mr. Breen in his report (P-114):

> 284(b) The snowmobile disclosed in the Honda Patent is a small, leaning snowmobile, with design considerations very different from those claimed in the REV Patents. The Honda Patent would not be a source of inspiration for a person skilled in the art wanting to design a "snowmobile" as per the claims of the REV Patents;

The Honda Patent (JP H8-91228) is concerned with a one ski machine that, according to Mr. Breen, would not have been sold in the market place if it was ever put into practice. It does not have a tunnel.

[538] The Court has already discussed at some length the SnoScoot, which commercialized the Yamaha 503 Patent. The 503 Patent did not represent itself as a snowmobile; in fact it sought to distinguich itself from a snowmobile. Its frame and body construction is comprised of an open tubular frame. It is meant to be light. Mr. Warner suggested that its weight would be around 120kg. In fact, his own report (D-107) refers to an exhibit (DD) that provides the dimension of the SnoScoot with the weight estimated rather at around 100kg.

[539] The first argument on obviousness is more difficult to apprehend. It conflates to some extent obviousness with the insufficiency of the Patents such that it is not possible to practice the invention. BRP raised that issue. It is conceptually difficult to understand how the lack of information to put the invention into practice can relate to obviousness. If obviousness is characterized by the skilled technician who keeps up with the state of the art being able to directly and without difficulty come to what is claimed in a patent, how does not being able to practice the invention equates with obviousness? In my view, the matter is better left to the lack of adequate disclosure.

[540] A consideration of secondary factors would also favour BRP. The Court has no doubt that the REV shows 1) superiority over the traditional configuration; 2) was used widely; 3) reaction in the specialized media, as demonstrated earlier, was emphatically positive; 4) the competition noticed. The evidence is overwhelming. The secondary factors constitute strong corroboration that something new was on the market.

[541] As can be seen, there is strong evidence that BRP created a new configuration for snowmobiles. However, BRP chose to argue its case by trying to show that angles and distances relating to the centralization of masses, the positions of seats, steering and footrest as well as ankles, knees and hips were sufficient to establish the infringement of the Patents, each being a configuration of a new snowmobile. Whether these Patents can be put into practice was hardly addressed by BRP in the final argument and in their memorandum of fact and law. That is in complete contrast to what was argued from the start by AC. AC put significant emphasis on the impossibility to go from the Patents to the new configuration. As put by Mr. Warner in his report

D-107 at para 125, “the only structural change discussed in the 106 Patent (although not claimed) is moving the steering device 132 more forward”. The issue is therefore whether, generally speaking, the inventions can be put into practice.

E. *Adequate disclosure: indefiniteness and insufficiency*

[542] Contrary to BRP that relegated the adequacy of the disclosure as somewhat of an afterthought to be dealt with at the end, AC started off with the quality of disclosure. In effect, AC has complained about how obscure the Patents-in-suit are in a variety of ways. Throughout the case, AC raised the issue of the difficulty posed by the three Patents in terms of defining an invention, the ambiguity of the disclosure and its insufficiency. How much of a new configuration, compared to conventional snowmobile configurations, is created by the so-called invention where what is offered is ranges in measurements? How is the old configuration, which ought to be the benchmark, the point of reference, defined or described to understand how much departure from the norm constitutes a new configuration? What are those metrics actually showing? The Court took this as being the main argument in view of the emphasis put on this issue.

[543] AC takes the Court to the fundamentals of the patent system. This takes us back to the original bargain as it is formulated again in *Teva Canada Ltd. v Pfizer Canada Inc.*, 2012 SCC 60, [2012] 3 SCR 625 [*Teva*] at paragraphs 32 and 33:

> [32] The patent system is based on a “bargain”, or *quid pro quo*: the inventor is granted exclusive rights in a new and useful invention for a limited period in exchange for disclosure of the invention so that society can benefit from this knowledge. This is the basic policy rationale underlying the Act. The patent bargain encourages innovation and advances science and technology. Binnie J. explained the *quid pro quo* as follows in *AZT*, at para. 37:

> A patent, as has been said many times, is not intended as an accolade or civic award for ingenuity. It is a method by which inventive solutions to practical problems are coaxed into the public domain by the promise of a limited monopoly for a limited time. Disclosure is the *quid pro quo* for valuable proprietary rights to exclusivity which are entirely the statutory creature of the *Patent Act*.

[33] The role of the patent specification in the quid pro quo was described as follows by Lord Halsbury in *Tubes, Ld. V. Perfecta Seamless Steel Tube Company, Ld.* (1902), 20 R.P.C. 77, at pp. 95-96:

> . . . if one has to look at first principles and see what the meaning of a Specification is . . . why is a Specification necessary? It is a bargain between the State and the inventor: the State says, "If you will tell what your invention is and if you will publish that invention in such a form and in such a way as to enable the public to get the benefit of it, you shall have a monopoly of that invention for a period of fourteen years." That is the bargain. The meaning which I think, in my view of the Patent Law, has always been placed on the object and purpose of a Specification is that <u>it is to enable, not anybody, but a reasonably well informed artisan dealing with a subject-matter with which he is familiar, to make the thing, so as to make it available for the public at the end of the protected period</u>. [Emphasis added.]

Lord Halsbury's view was cited with approval by Dickson J. (as he then was) in *Consolboard*, at p. 523.

[Emphasis in the original]

In short, the "sufficiency of disclosure lies at the very heart of the system" as noted by the Court at paragraph 31.

[544] The *Patent Act* provides for what must be found in the specification of an invention:

27 (3) The specification of an invention must	**27 (3)** Le mémoire descriptif doit :
(a) correctly and fully describe the invention and its operation or use as contemplated by the inventor;	**a)** décrire d'une façon exacte et complète l'invention et son application ou exploitation, telles que les a conçues son inventeur;
(b) set out clearly the various steps in a process, or the method of constructing, making, compounding or using a machine, manufacture or composition of matter, in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it pertains, or with which it is most closely connected, to make, construct, compound or use it;	**b)** exposer clairement les diverses phases d'un procédé, ou le mode de construction, de confection, de composition ou d'utilisation d'une machine, d'un objet manufacturé ou d'un composé de matières, dans des termes complets, clairs, concis et exacts qui permettent à toute personne versée dans l'art ou la science dont relève l'invention, ou dans l'art ou la science qui s'en rapproche le plus, de confectionner, construire, composer ou utiliser l'invention;
(c) in the case of a machine, explain the principle of the machine and the best mode in which the inventor has contemplated the application of that principle; and	**c)** s'il s'agit d'une machine, en expliquer clairement le principe et la meilleure manière dont son inventeur en a conçu l'application;
(d) in the case of a process, explain the necessary sequence, if any, of the various steps, so as to distinguish the invention from other inventions.	**d)** s'il s'agit d'un procédé, expliquer la suite nécessaire, le cas échéant, des diverses phases du procédé, de façon à distinguer l'invention en cause d'autres inventions
(d) in the case of a process, explain the necessary sequence, if any, of the various steps, so as to distinguish the invention from other inventions.	**d)** s'il s'agit d'un procédé, expliquer la suite nécessaire, le cas échéant, des diverses phases du procédé, de façon à distinguer l'invention en cause d'autres inventions.

[My emphasis]

Subsection 27 (4) states that the claims define the scope of the monopoly:

27 (4) The specification must end with a claim or claims defining distinctly and in explicit terms the subject-matter of the invention for which an exclusive privilege or property is claimed.	**27 (4)** Le mémoire descriptif se termine par une ou plusieurs revendications définissant distinctement et en des termes explicites l'objet de l'invention dont le demandeur revendique la propriété ou le privilège exclusif.

The two should not be confused. As reiterated in *Teva* at paragraph 55, "what the Act requires is that the courts consider the specification as a whole to determine whether the disclosure of the invention is sufficient."

[545] The Supreme Court of Canada in *Pioneer Hi-Bred v Canada (Commissioner of Patents)*, [1989] 1 SCR 1623 [*Pioneer Hi-Bred*] could hardly have been much clearer about the need for complete disclosure:

> In Canada, the granting of a patent means the kind of contract between the Crown and the inventor in which the latter receives an exclusive right to exploit his invention for a certain period in exchange for complete disclosure to the public of the invention and the way in which it operates.
>
> (p.1636)
>
> [My emphasis]

[546] Disclosure will serve at least two purposes. The competition will know the limits of the patent and it will therefore "be aware of their freedom of maneuver when they work in an area related to that of the patentee." (*Pioneer Hi-Bred*, p. 1637) Furthermore, the disclosure will identify the steps followed and it will distinguish between that which is theoretical and the invention which requires human activity.

[547] The principles are well described at p. 1638 of *Pioneer Hi-Bred*:

> In summary, the *Patent Act* requires that the applicant file a specification including disclosure and claims (*Consolboard Inc.*, *supra*, at p. 520). Canadian courts have stated in a number of cases the test to be applied in determining whether disclosure is complete. The applicant must disclose everything that is essential for the invention to function properly. To be complete, it must meet two conditions: it must describe the invention and define the way it is produced or built (Thorson P. in *Minerals Separation North American Corp. v. Noranda Mines Ltd.*, [1947] Ex. C.R. 306, at p. 316). The applicant must define the nature of the invention and describe how it is put into operation. A failure to meet the first condition would invalidate the application for ambiguity, while a failure to meet the second invalidates it for insufficiency. The description must be such as to enable a person skilled in the art or the field of the invention to produce it using only the instructions contained in the disclosure (Pigeon J. in *Burton Parsons Chemicals Inc. v. Hewlett-Packard (Canada) Ltd.*, [1976] 1 S.C.R. 555, at p. 563; *Monsanto Co. v. Commissioner of Patents*, [1979] 2 S.C.R. 1108, at p. 1113) and once the monopoly period is over, to use the invention as successfully as the inventor could at the time of his application (*Minerals Separation*, *supra*, at p. 316).
>
> [My emphasis]

[548] The *Teva* case (aka the "Viagra case") constitutes a further elaboration of what is required for a disclosure to satisfy the law. Both the claims and the disclosure will be put to contribution. The failure to describe how to put in operation an invention will result in invalidation for insufficiency. In order to put in operation an invention with only the assistance of the patent, the *Teva* Court corrects what it considers to have been a misinterpretation of *Consolboard* by being merely satisfied with the answer to two questions: "What is your invention?" and "How does it work?". The Court insists on the quality of the description in answering the two questions. It must be "correct and full", in the words of Dickson J. in *Consolboard*, quoting with approval *Minerals Separation North American Corp. v Noranda Mines Ltd.*, [1947] Ex CR 306 "in order that"… :

> … when the period of monopoly has expired the public will be able, having only the specification,to make the same successful use of the invention as the inventor could at the time of his application.
>
> [My emphasis]

[549] In fact, the *Teva* court applies a rigorous test to the specification:

> [74] The disclosure in the specification would not have enabled the public "to make the same successful use of the invention as the inventor could at the time of his application", because even if a skilled reader could have narrowed the effective compound down to the ones in Claim 6 and Claim 7, further testing would have been required to determine which of those two compounds was actually effective in treating ED. As the trial judge stated, at para. 146, "[a] skilled reader would then conduct tests on those two compounds and determine which of those compounds worked". And as he also stated, at para. 135, "the skilled reader must undertake a minor research project to determine which claim is the true invention".

[550] The fact that *Teva* had been able to use the invention does not change the requirement that the specification must be of such quality, being correct and full, as to allow the skilled person to put the invention into practice:

> [75] Pfizer argued in the Court of Appeal that Teva had already been able to make the same use of the invention having only the specification, because it had filed a submission with the Minister of Health for a drug product containing sildenafil (F.C.A., at para. 48). However, this does not change the fact that the specification required, at a minimum, "a minor research project" in order to determine whether Claim 6 or Claim 7 contained the correct compound. The fact that Teva carried out this minor research project is irrelevant to Pfizer's obligation to fully disclose the invention. More importantly, what must be considered is whether a skilled reader having only the specification would have been able to put the invention into practice. The trial judge clearly found that the skilled reader would have had to undertake a minor research project to determine what the true invention was.
>
> [My emphasis]

Leaving the reader guessing, in essence saying "figure it out", runs the significant risk of making the patent invalid. A method of drafting that does not clearly set out the invention will render the patent invalid (para 76, *Teva*). The Court cites Perry and Currier (*Canadian Patent Law*, LexisNexis, 2012) at § 8.55:

> [78] …They say the following, at §8.55:
>
> > . . . an invention that is possessed of novelty, inventiveness and utility will not benefit from patent protection if the specification is insufficient or ambiguous. The description must explain the nature of the invention failing which the specification is ambiguous, and it must describe how the invention is put into operation failing which the specification is insufficient. In either case, the patent is invalid.
>
> [Emphasis is the original]

Vaver put it thus:

> If a person skilled in the art can arrive at the same results only through chance or further long experiments, the disclosure is insufficient and the patent is void. …
>
> Ultimately, the disclosure must be fair, honest, open and sufficient. The sufficiency of the disclosure, with any valid amendments made to it, is judged at the patent's claim date. Inventors need not keep abreast of their field after filing their application: that is made clear by a provision that allows the making of only such changes to a specification as are reasonably inferable from the original disclosure. Patent holders cannot therefore be held responsible for inadequacies that arise from knowledge acquired or developments occurring after the claim date.

> The disclosure must give skilled readers enough information for them easily to adopt the invention when the patent expires, and for them to try to improve or experiment on it meanwhile. The patent holder who sets puzzles or holds back essential secrets invalidates the whole patent. The disclosure is equally insufficient if the instructions or drawings on how to work the invention are wrong and a skilled worker cannot use them or his general ability to replicate the invention.
>
> (p. 342)
>
> [My emphasis]

[551] Obscurity is frowned upon. Disclosure is important. It is essential. Game playing should not be allowed as the *Teva* Court reiterated:

> [80] …However, the public's right to proper disclosure was denied in this case, since the claims ended with two individually claimed compounds, thereby obscuring the true invention. The disclosure failed to state in clear terms what the invention was. Pfizer gained a benefit from the Act — exclusive monopoly rights — while withholding disclosure in spite of its disclosure obligations under the Act. As a matter of policy and sound statutory interpretation, patentees cannot be allowed to "game" the system in this way. This, in my view, is the key issue in this appeal. It must be resolved against Pfizer.
>
> [My emphasis]

The Supreme Court has found as a matter of policy that there is a price to pay in allowing for imprecision of a patent that becomes a public nuisance:

> The patent system is designed to advance research and development and to encourage broader economic activity. Achievement of these objectives is undermined however if competitors fear to tread in the vicinity of the patent because its scope lacks a reasonable measure of precision and certainty. A patent of uncertain scope becomes "a public nuisance" (R.C.A. *Photophone, Ld. V. Gaumont-British Picture Corps.* (1936), 53 R.P.C. 167 (Eng. C.A.), at p. 195). Potential competitors are deterred from working in areas that are not in fact covered by the patent even

> though costly and protracted litigation (which in the case of patent disputes can be very costly and protracted indeed) might confirm that what the competitors propose to do is entirely lawful. Potential investment is lost or otherwise directed. Competition is "chilled". The patent owner is getting more of a monopoly than the public bargained for. There is a high economic cost attached to uncertainty and it is the proper policy of patent law to keep it to a minimum.
>
> (*Free World Trust*, para 42)
>
> [My emphasis]

[552] More than one hundred years ago, the dangers of uncertainty caused by ambiguity were described aptly by the House of Lords:

> There seems to be some danger of the well known rule of law against ambiguity being in practice invaded. Some of those who draft specifications and claims are apt to treat this industry as a trial of skill, in which the object is to make the claim very wide upon one interpretation of it in order to prevent as many people as possible from competing with the patentee's business, and then to rely upon carefully prepared sentences in the specification which, it is hoped, will be just enough to limit the claim within safe dimensions if it is attacked in court. This leads to litigation as to the construction of specifications, which could generally be avoided if at the outset a sincere attempt were made to state exactly what was meant in plain language. The fear of a costly law suit is apt to deter any but wealthy competitors from contesting a patent. This is all wrong. It is an abuse which a court can prevent, whether a charge of ambiguity is or is not raised on the pleadings, because it affects the public by practically enlarging the monopoly, and does so by a kind of pressure which is very objectionable. It is the duty of a patentee to state clearly and distinctly, either in direct words or by clear and distinct reference, the nature and limits of what he claims. If he uses language which, when fairly read, is avoidably obscure or ambiguous, the patent is invalid, whether the defect be due to design, or to carelessness, or to want of skill…
>
> I cannot see what purpose there could have been using the roundabout language here employed, which has provoked so much argumentative subtlety and taken up to much time, unless the object was to hold in reserve a variety of constructions for use if the Patent should be called in question, and in the meantime to frighten off those who might be disposed to challenge the Patent.

> *Natural Colour Kinematograph Co. v Bioschemes Ltd.* (1915), 32 RPC 256 at 266

It seems to me that the comments apply equally to sufficiency of disclosure. Indeed they apply to the whole disclosure.

[553] AC argued that the broad ranges asserted by the three Patents cause difficulty to the skilled person, leading to the need for a great deal of experimentation before reaching a configuration that achieves the promised utility of better performance of the now reconfigured snowmobile. Although it is permissible to draft claims in terms of results, one runs the risk of running afoul of the famous "bald men" metaphor. This all goes back to the fundamental principle that the patent must teach how to achieve the result, to put the invention into practice without having to undertake a minor research project. As stated in *Free World Trust*, what counts in the patent is not so much the desirable result but rather how to achieve the result:

> 32 …As stated, the ingenuity of the patent lies not in the identification of a desirable result but in teaching one particular means to achieve it. The claims cannot be stretched to allow the patentee to monopolize anything that achieves the desirable result. It is not legitimate, for example, to obtain a patent for a particular method that grows hair on bald men and thereafter claim that *anything* that grows hair on bald men infringes. …

The invention is with respect to the design and construction of a snowmobile. However, the Patents are drafted such that the inventor claims that the new configuration will result in the snowmobile's rider sitting in a position that will have some characteristics. Because the result of the invention is a number of measurements and angles, once those results are found on other snowmobiles, they are said to be infringing the Patents. However, AC argues that we are taken to

the “bald men” metaphor in that, having an invention concerned with design and construction of a snowmobile (method of growing hair on bald men), all of a sudden anything that gets within same measurements (anything that grows hair) infringes. I share that view.

[554] Somewhat surprisingly, BRP argues little concerning what it refers to as “other grounds of invalidity”. The three Patents do not claim a result: rather each patent claims a snowmobile configuration in order to improve the rider’s comfort and control over the snowmobile. The 106 Patent, 813 Patent and 964 Patent all claim a particular configuration, but with different characteristics in how the rider would be repositioned:

a) the seating, steering and footrest positions are arranged such that the center of gravity of the rider will be closer to the center of gravity of the snowmobile in comparison to the conventional snowmobile (106 Patent);

b) the same positions define a triangle which has ranges of angles such that the center of gravity of the rider is closer to the center of gravity of the snowmobile in comparison to the conventional snowmobile (813 Patent);

c) the hips, knees and ankles of the rider are positioned in relation to one another differently compared to a conventional snowmobile (964 Patent).

[555] As I understand the position taken by BRP, these measurements must be sufficient to put the invention into practice. They must show the limits of the Patents such that the competition is put on notice. The Patents answer the questions, “What the invention is?” and “How it works?”. The proof of that advanced by BRP is that AC, “as a person of skill in the art, clearly knew at all relevant time how to build a snowmobile in relation to a steering position, a seat position and a footrest” (memorandum of fact and law, paras 807 and 809). The exact same and only argument was offered during oral argument (transcripts, April 16, 2015, p. 248 and 250). The person skilled

in the art will know how to build a snowmobile. It was also the unsuccessful defence offered by Pfizer in *Teva* (para 75). It is not successful here either.

[556] With all due respect, that falls way short of the mark given the AC argument. Justice Roger Hughes put it in his usual colourful way in *Ratiopharm Inc. v Pfizer Limited*, 2009 FC 711, 76 CPR (4^{th}) 241:

> [155] To a great extent, these issues are intertwined. Lawyers are keen to put labels on things, cite snippets of law and confine issues to the labels and snippets. This is not new, two centuries ago actions would fail if not pleaded in the right way, trover instead of replevin and so forth. The simple facts of this case are that Pfizer developed its amlodipine drug through a routine pre-formulatopn [*sic*] procedure in which a common procedure called a salt screen was conducted. As a result of that salt screen of the seven or so salts tested besylate was selected as the preferred salt. It was not clearly superior to three or four others tested particularly those of the sulphonate group (besylate, mesylate, napsylate, tosylate) but was chosen as a reasonable compromise. Some executive made a decision to seek patent protection. The inventors recommended the besylate , the tosylate and, possibly the mesylate for that purpose. The patent department singled out the besylate only , mixed data from some tests with data from other tests, put in data that cannot be found anywhere in the evidence and left out data favourable to other salts while using words such as unique and outstanding and particularly suitable when referring to the besylate-words the inventors never used. This is the essence of the facts when it comes to assessing validity on a number of legal bases.
>
> [156] The Courts have discussed in various decisions what is required of a person who, believing they have made an invention, must do in order to obtain a valid patent. They must:
>
> 1. Have made an invention, something that would not have been obvious to a person skilled in the art (Obviousness and Invention);
>
> 2. The invention must be new. If it has been previously disclosed in such a way as to enable a person skilled in the art to understand the invention as previously disclosed, no valid patent can be granted (Novelty);

> 3. The invention as *promised in the specification* must live up to that promise. It must have the promised utility (Utility);
>
> 4. The invention must be fully and correctly disclosed as *contemplated by the inventors* in a way that a person skilled in the art could read the patent and put the invention into practice (Disclosure); and
>
> 5. The patent specification cannot mislead a person skilled in the art (Section 53).

The issues are always intertwined. Justice Michael Phelan made the same point in *Sanofi-Aventis Canada Inc. v Ratiopharm Inc.*, 2010 FC 230, 82 CPR (4th) 414:

> [51] As mentioned earlier, this attempt at creating watertight compartments when the arguments and evidence overlap to a significant extent suggests that the better approach is that of the "seamless garment of the law" approach adopted by Justice Harrington in *Purdue Pharma v. Pharmascience Inc.*, 2009 FC 726.
>
> [52] The basic arguments are whether the invention disclosed a novel invention in relation to Irbesartan and in so doing whether it gave enough detail and parameters to be valid.
>
> [My emphasis]

Here, the issue raised by AC is essentially the same. It has complained in various ways about the Patents not disclosing an invention, the specifications being ambiguous and insufficient to understand the Patents and put them into practice. Are there enough details and parameters to know what the invention is and to put the invention into practice? In my view, there can be only one answer. No.

[557] We should start with the obvious. The *Patent Act* provides for the requirements of the specification.

[558] I have reproduced at some length the evidence about the difficulty encountered in building the prototypes of the REV (see paras 129, 139, 146 and 161 of these reasons), as well as the evidence concerning the creation of what eventually became the 106 and 813 Patents. Finally, I have described in some details the great number of claims involved in this case. At the end of the day, I cannot accept that something that complex and without guidance gives enough details and, more importantly, parameters, to be valid. We do not know with any precision what is the invention claimed or how it can be used.

[559] Furthermore, section 36 confirms that each patent contains just one invention. Thus, we are not to consider together the three Patents to see if, put together, they would provide details and parameters to conclude that each is valid because the collection of specifications enables a person skilled in the art to make, construct or use it. Each of the three Patents stands on its own. Each must disclose enough to make the thing, the invention.

[560] In my view, the Patents-in-suit suffer from ambiguity and insufficiency. Although the Patents claim as redesigned a snowmobile with a new construction, nothing is said about how the new snowmobile ought to be redesigned with its components organized differently in its construction. In fact, nothing is said about what the reconfiguration is. The nature of the invention is that once reconfigured, the rider would be sitting in a different position. But the Patents are silent as to how much of a change constitutes a reconfiguration. There is no indication as to what were the measurements on a conventional snowmobile such that the skilled person could see what difference is contemplated. So, what is that new construction of a snowmobile? The Patents leave

that ambiguous. The same can be said about the actual construction of the snowmobile in spite of the fact that the invention is concerned with the construction of a snowmobile.

[561] BRP's contention and only argument is that the disclosure must have been sufficient since AC was able to build a snowmobile that ran afoul of the inventions. With respect, this is beside the point. Ever since *Consolboard*, the law has been clear that the specification alone is to be used to put the invention into practice, without the assistance of a minor research project. The same kind of argument was specifically rejected in *Teva* at paragraph 75.

[562] In fact, there is uncontradicted evidence that manufacturers in this industry follow the practice of acquiring products of the competition to ascertain how they are constructed. Among many is the statement of Kevin Breen, the BRP expert, during his cross-examination about how to use the Patents to reconfigure a traditional snowmobile into the invention:

> COUNSEL: So the person skilled in the art in order to help -- to figure out what the invention is here, is needing to dismantle a snowmobile if they want to use an ATD to figure out where the rider and how the rider is sitting?
>
> MR. BREEN: Here, that's pretty standard design process. You buy competitive products, sort to speak, and bench them. You take them apart and find out how they're constructed and look at your design. It's happening every day in the automobile industry.
>
> (transcripts, March 24, 2015, p. 46-47)

Comments to that same effect were offered by Brad Darling and Troy Halvorson.The simple fact that AC was able to build a snowmobile with a new configuration does not mean that it was done based on the specification alone. The evidence of Mr. Breen contradicts such an assertion. It is also common sense.

[563] Mr. Warner testifies to the effect that, if at all possible, it would take the skilled person months or years to go through all the steps needed to figure out the invention using only the specification. Mr. Warner, in his report (D-107), notes that the only structural change in the 106 Patent is moving the steering device forward, a change that is not even claimed. The structural components of a snowmobile are recited in the Patents, but there is no indication to be found in the Patents of what the structural redesign has to be: what happens to the engine, the gas tank, the track, the tunnel, etc. The expert states that "the patent seeks to claim only the result of any proposed arrangement – i.e. the position of the rider" (D-107, para 128). He says at paragraph 129 that "there is no numerical comparison in the 106 Patent of the position of the rider on the snowmobile of the position of the rider on the snowmobile of the 106 Patent as compared to the "conventional" snowmobile." The same can be said of course of the sister Patent 813 and of the 964 Patent (para 233). Surprisingly, in my estimation, that important evidence is not even seriously challenged by the Plaintiff.

[564] Mr. Breen appears to have largely ignored the issue in his report on invalidity (P-114). However, he was subjected to cross-examination on how, using exclusively the Patents, the skilled person would be able to reconfigure a snowmobile (transcripts, March 24, 2015, p. 44-51). I could not find anything that would contradict Mr. Warner's assertions about the experimentation needed to ascertain, based on the Patents alone, the new invention which "concerns the overall design and construction of a snowmobile" (106 Patent, p.1, line 1; 813 Patent, p. 1, line 1; 964 Patent, p. 1, line 1). Rather, Mr. Breen spoke of an iterative process (p. 45).

[565] I have also been somewhat taken aback by the evidence of the patent lawyer employed at the time by BRP. Mr. Cutler explained carefully at trial how the 106 and 813 Patents came about.

[566] On cross-examination, it was established that it is one of the inventors, Mr. Bruno Girouard, who would have gone away and performed the measurements which ended up in the 106 and 813 Patents. However, it appears that the taking of the measurements was not supervised, and it was certainly not supervised by the patent agent. It is in fact uncertain how the measurements were taken as Mr. Girouard testified that the only records of those measurements that are in the end so important are those in the Patents. This exchange between counsel for AC and Mr. Cutler is telling:

> COUNSEL: And the numbers that are included in there, were those the idea of Mr. Karceski as well?
>
> MR. CUTLER: No, they were calculated by Bruno. He was given instructions to sort of have what is the maximum range and then what is more preferred range and what is better, and what is better, and what is better. So the structure of how that's drafted was us, but the actual numbers were not -- were not from us, they're from Bruno.
>
> COUNSEL: And you don't know if those numbers came from actual measurements that Mr. Girouard made on the snowmobile?
>
> MR. CUTLER: No, you'd have to ask Bruno how he got them.
>
> COUNSEL: Okay. You were just given numbers?
>
> MR. CUTLER: That's correct, yes.
>
> COUNSEL: As you mentioned that you had drafted, if I'm understanding correctly, a patent application and then you went and had the discussion about the standard and went to look for the standard, but you had an application in hand at that time, if I understood your testimony?
>
> MR. CUTLER: We had sort of a skeleton or a draft of what we wanted to put in because this was sort of, you know, it wasn't a bake

> the cake and put it in the oven, it was more of a Jeff was coming every week and sort of we were revising and every week it got sort of more and more detailed.
>
> COUNSEL: But at that time you had an application with numbers in it, you had different measurements that you were going to include in the patent application?
>
> MR. CUTLER: Not before we would have had the standard, because Bruno needed the standard to make the measurements -- or at least his instructions were to make the measurements from the standard. But as I said, I don't know what he actually did, so -- like I wasn't there when he did it, but you would have to ask him what he actually did to -- when he had the standard and the instructions and how he got the numbers.
>
> (transcripts, February 17, 2015, p. 91-92)

The point of the matter is this. The idea has been that the measurements would allow the person skilled in the art to practice the invention based on those measurements. Given the evidence led in this trial, it is a mystery to me how that can be accomplished. However, on top of that, there is the difficulty posed by measurements the value of which is uncertain. How does someone know that this measurement is supposed to produce that configuration? Mr. Warner says that you will have to try many times. Mr. Breen says that it is an iterative process. No evidence clarified things.

[567] We can compare this process of trying to figure out the configuration of a new snowmobile with the Supreme Court decision in *Teva* where the inadequate disclosure was that "there was no basis for a skilled person to determine which of Claim 6 and Claim 7 contained the useful compound. Pfizer's own expert witness admitted that a person skilled in the art who read the patent would not know which compound was shown by the study to be useful in treating ED." (para 79) That appears to be similar to a research project that would have to be undertaken if one is to judge by the following exchange between counsel for AC and Mr. Breen:

> COUNSEL: And how do you deal with the ranges in the claims, Mr. Breen? So they're not -- it's not one number, it doesn't say the distance between the foremost drive track axle and the centre of gravity of the rider is one specific number. There's [*sic*] ranges of numbers. So how do you figure out how that plays into it in terms of the snowmobile configuration?
>
> MR. BREEN: I guess again it's an iterative process where I look at the broadest, make adjustments until I end up with the narrowest.
>
> COUNSEL: Okay. So you would have to go through the 20 measurements in the 106 patent first, then you would have to go through all the ranges in those 20 measurements all to try to figure out what the snowmobile configuration is?
>
> MR. BREEN: If you wanted to build one, yes.
>
> COUNSEL: If you wanted to understand what the configuration is, where the components are, that's what you'd need to do, wouldn't it?
>
> MR. BREEN: Well, it's one way to do it.
>
> COUNSEL: That's one way you talk about in your report?
>
> MR. BREEN: Yes.
>
> (transcripts, March 24, 2015, p. 49-50)

[568] In this case, the weight of the evidence favours clearly the proposition that the disclosure does not tell the skilled person how to reconfigure the snowmobile what even that reconfiguration may be. It is not insignificant that the evidence of the inventors was to the effect that their original idea required a lot of work. From the "Buck" to the prototypes, they had to relocate the engine and the gas tank, adjust the steering. The best that is offered by BRP is that the skilled person will figure it out; Mr. Breen speaks of an iterative process to figure it out. There is no evidence that all a POSITA had to do is to take the measurements and that the invention describes the way it is produced (*Pioneer Hi-Bred*, p. 1638). The evidence of one of the inventors, Mr. Girouard, is clear

that the construction of the new snowmobile required multiple changes to the components. What is disclosed? Nothing. The only evidence in this case is not that the skilled person would have to undertake a minor research project, which is already too much (*Teva*, para 75). It is a major research project.

[569] The absence of indication as to how the new snowmobile is constructed in order to facilitate the new position leads to the Patents claiming a result more than anything else.

[570] Drafting claims in terms of desired result is not impermissible. Here the Patents are drafted on the same pattern. The invention is concerned with the overall design and construction of a snowmobile such that the rider will be seated toward the front. That is the result that will be achieved by the invention. That, we are told, will result in different measurements and angles. However, if limited to the result, it is doubtful that they will teach how the result is achieved, which is what is required: "As stated, the ingenuity of the patent lies not in the identification of a desirable result but in teaching one particular means to achieve it." (*Free World Trust*, para 32) The problem in this case is that the rider's forward position, which is manifested by some measurements according to the inventors, never teaches how the configuration will be obtained or, for that matter, whether the measurements are a valid prediction of a new configuration. I accept the evidence of Mr. Warner about the lack of information. His paragraph 233 of his report (D-107) is a good illustration of the only evidence presented:

> 233. There is no discussion in the 964 Patent as to any change in the seat of the snowmobile that provides the hips being raised relative to the knees. Similarly, there is no change described to the running boards/sideboards of the snowmobile that provides for the ankles to be positioned behind the knees. The only structural change described in the 964 Patent is the

> movement of the steering device and steering position more forward (which was already discussed in the other BRP Patents). It would not be clear to the person skilled in the art how the snowmobile has been redesigned to cause a change in the relationship between the hips, knees and ankles. The person skilled in the art would be further confused by the claimed redesign because they would be aware of riders having their hips above their knees and their ankles behind their knees while riding prior art snowmobiles, as will be discussed further below.

[571] I also accept that the scope of the measurements and the combination of measurements are not dealt with in the Patents. In the absence of any compelling evidence to the contrary, and in view of my own observations, I accept that it would be very difficult for the skilled person to appreciate the measurements and, more importantly, how they translate into the rider's position on the snowmobile. The disclosure is simply insufficient.

[572] In this case, each Patent relates to the configuration of a snowmobile that would satisfy some measurements. That does not sufficiently describe the invention and does not allow a person skilled in the art to put the invention into practice, "to define the way is produced or built" in the words of the *Pioneer Hi-Bred* Court. As that Court said:

> The description must be such as to enable a person skilled in the art or the field of the invention to produce it using only the instructions contained in the disclosure.
>
> (p. 1638)

There are no instructions here. The evidence of Mr. Breen seems to me to be compelling:

> COUNSEL: And which measurements are they using, Mr. Breen, because there is about 15, 20 measurements in the patent? So which one are they using when they're trying to figure out what the

construction is? Are they trying to look at all of the measurements or some of them? Which ones are they looking at?

MR. BREEN: As I said, it's an iterative process. Eventually you'd look at all of them. You'd start to move this here, measure this, move this, measure that, so that eventually you kind of build the thing until you end up with having taken into account all the measurements.

COUNSEL: Okay, so you'd have to go through all the measurements in the 106 patent, for example, ultimately?

MR. BREEN: If your goal is to construct a snowmobile that's consistent with that, you'd have to check.

COUNSEL: So if your goal is to understand what the snowmobile is of the invention you would have to go through all of those measurements?

MR. BREEN: Conceptually, yes.

COUNSEL: Okay, and you can't say here whether or not in going through all those measurements that would represent a consistent position? You might -- that might require changes and modifications as you go through all those measurements?

MR. BREEN: I would think it would. That's the whole idea. The patents talk about narrowing ranges, there is interaction between the various component parts. I think it's something that's going to be an iterative process. I think I described that in my first report.

COUNSEL: So iterative process, and we don't know what the result would be standing here today?

MR. BREEN: I guess not for something like that.

COUNSEL: You've not done that process to try and figure out what these inventions are? You've not taken the snowmobile and tried to do this, have you?

MR. BREEN: No, I've measured other snowmobiles to see -- or looked at the measurements done by Mr. Larson of the other snowmobiles, but I haven't taken them apart and built a snowmobile from scratch.

(transcripts, March 24, 2015, p.47-48)

In *Teva*, a skilled reader was unable to identify between a pair of claimed compounds. The disclosure was held to be insufficient. The fact that the skilled person would have to perform experiments to determine which compound treated erectile dysfunction was enough to conclude that the specification was insufficient. The skilled person could determine which of two compounds was the invention from reading the patent. The evidence in this case is in my view obscure as in *Teva*. The Patents are invalid by reason of insufficiency and ambiguity.

F. *The 964 Patent: other invalidity arguments*

[573] The Defendants raised issues specific to the 964 Patent. They claim there was material misrepresentation, the 964 Patent would be anticipated by the 106 Patent and the 813 Patent and there was prior public disclosure.

(1) Material misrepresentation

[574] AC compares figure 1 in the 106 Patent (and in the 813 Patent) with figure 1 in the 964 Patent. These figures present ostensibly the prior art with the position taken by the rider. There is no doubt that there are differences. As I understand it, AC's argument is to say that the difference in the rider's position is accentuated in the 964 Patent such that the difference between the conventional snowmobile and the reconfigured snowmobile is presented as being even more dramatic (AC's memorandum on invalidity, para 1047).

[575] BRP's response is to explain that the two snowmobiles used in the 106 Patent and the 964 Patent are simply two different snowmobiles having different platforms. One is the 1999 Ski-Doo Model MXZ 440, 500 or 670 HO built on a S2000 platform while the other is a 1999 Ski-Doo Model MXZ 600 built on a ZX platform. There is no misrepresentation as both figures depict the conventional rider position on a snowmobile. At any rate claims BRP, that would not have had any influence on the issuance of the 964 Patent. The figure merely illustrates the difference between snowmobile configurations through the relationship of the hips, knees and ankles which are represented.

[576] Subsection 53 (1) of the *Patent Act* provides that the patent is void if there is a material allegation that is untrue. It reads:

Void in certain cases, or valid only for parts	**Nul en certains cas, ou valide en partie seulement**
53 (1) A patent is void if any material allegation in the petition of the applicant in respect of the patent is untrue, or if the specification and drawings contain more or less than is necessary for obtaining the end for which they purport to be made, and the omission or addition is wilfully made for the purpose of misleading.	**53 (1)** Le brevet est nul si la pétition du demandeur, relative à ce brevet, contient quelque allégation importante qui n'est pas conforme à la vérité, ou si le mémoire descriptif et les dessins contiennent plus ou moins qu'il n'est nécessaire pour démontrer ce qu'ils sont censés démontrer, et si l'omission ou l'addition est volontairement faite pour induire en erreur.

[577] The parties do not dispute that whether or not there is material misrepresentation is to be decided on a case-by-case basis as it is fact specific (*Corlac Inc. v Weatherford Canada Inc.*, 2011

FCA 228, at para 126). The test is whether or not the misrepresentation made a difference to the issuance of the patent.

[578] In the case at hand, it has not been proven that there was a misrepresentation, let alone a material one. It is rather another example of some carelessness that generated unneeded ambiguity where comparing various instruments. Even if the Court accepts Mr. Warner's testimony that it would have been possible to sit the rider of figure one of the 964 Patent in a position closer to that in figure one of the 106 Patent, that can hardly be seen as a misrepresentation. Whether or not the position of the knees, shown above the hips in the 964 figure, is accentuated compared to the 106 Patent, that does not change the fundamental proposition that the hips on the reconfigured snowmobile would be above the knees.

(2) The 964 Patent is anticipated by the 106 Patent and the 813 Patent

[579] This time, the Defendants argue that the claims of the 964 Patent are concerned with the general proposition that the new configuration produces the hips above the knees and the ankles behind the knees. This would be shown in the figures of the 106 and 813 Patents. That would constitute anticipation.

[580] The evidence offered by AC falls short of what would be required to show anticipation. Both in oral argument and in their memorandum of fact and law, the Defendants suggest that the measurements could be taken from the figures in the two others Patents. We shall never know if that is even possible because no such evidence was led. The evidence of Mr. Warner is so thin (in

effect, one paragraph out of 377 paragraphs in D-107) as to be more impressionistic and in the nature of an afterthought.

(3) Prior public disclosure

[581] This is another one of those last-ditch efforts. Here, AC speculates that because BRP tested its prototypes of the REV snowmobiles on trails accessible to the public, that, in and of itself, constitutes public disclosure because someone could have witnessed the rider's hips above his knees, and the ankles behind the knees, and the hips behind the ankles.

[582] There is not even a suggestion by AC that the use of public trails was anything but for reasonable experimentation. Since at least 1904, our law has recognized the need to experiment in order to bring the invention to perfection [*Conway*]. This exception was recognised recently by our Court. In this case, the evidence is that BRP was conscious of the need for confidentiality and took steps to ensure it would be protected. The experimentation was necessary in view of the many uses that would be available for that new configuration. Actually, AC did not address at all the well-recognized experimental use exception, making its argument on the sole basis that prototypes were out on public trails and that a passerby would have been able to identify the positioning. In my view, the experimental use exception would suffice to dispose of that argument.

[583] But there is more. The Court is less than persuaded that the public disclosure contemplated here would have provided any enablement. As in *Bauer*, there is little information that is made available to the public while riding the snowmobile on a trail, even for the person skilled in the art. The necessary information to enable is not made available. The invention disclosed in the Patents

is not understood, its parameters are not accessible and it would not be possible to reproduce the invention on the simple basis that a snowmobile has been seen on a trail (*Varco Canada Limited v Pason Systems Corp*, 2013 FC 750, *Bauer*, para 215 and following).

[584] As a result, there was no material misrepresentation, prior public disclosure or anticipation of the 964 Patent by the 106 and 813 Patents.

VII. Objections

[585] Over the course of the trial, a number of objections were made by the parties to the admissibility of some evidence. These objections fell in four categories:

i) reply evidence of experts;

ii) introduction of documents not found in the affidavit of documents;

iii) admissibility of expert reports containing assertions on questions of law;

iv) admissibility of reports concerning testing conducted in spite of the absence of one party.

[586] The first two categories will be dealt with in short order. As for the other two, they have been the subject of more formal motions and have been argued at length.

A. *Reply evidence and documents not listed in affidavits of documents*

[587] First, as for the reply evidence of experts, AC took the view that many of the expert reports presented in reply by BRP did not properly qualify as reply, as they were not responsive to new issues raised by expert report offered by AC in response to the initial reports presented by BRP. The Court proceeded in each case to an examination of the impugned paragraphs.

[588] In every case, the Court applied the test in *R. v Krause*, [1986] 2 SCR 466 rigorously. It is articulated thus at page 474:

> The plaintiff of the Crown may be allowed to call evidence in rebuttal after completion of the defence case, where the defence has raised some new matter or defence which the Crown has had no opportunity to deal with and which the Crown or the plaintiff could not reasonably have anticipated. But rebuttal will not be permitted regarding matters which merely confirm or reinforce earlier evidence adduced in the Crown's case which could have been brought before the defence was made. It will be permitted only when it is necessary to insure that at the end of the day each party will have had an equal opportunity to hear and respond to the full submissions of the other.

[589] As a result of the application of the test, counsel withdrew paragraphs and objections. The Court ruled on a number of objections in open court.

[590] Similarly, some objections were raised early on about some documents which would not have been strictly listed in affidavits of documents. The matter was resolved by allowing admissibility as long as there was no abuse, and none was found, and subject to allowing time to cross-examine and respond if there was such a need (*Halford v Seed Hawk Inc.*, 2001 FCT 1195 at

para 7, 16 CPR (4th) 204). In the end, there was not any issue that was left unattended as the evidence needed to address the matters raised in this case was ultimately entered.

B. *Questions of law and testing*

[591] Prior to the Court hearing testimony from Mr. Breen, counsel for Arctic Cat filed a motion to challenge the admissibility of certain paragraphs and attachments to his Expert Report. This constitutes the third category of objections. Specifically, counsel for AC request that paragraphs 18, 19, 52(c), 72, 127, 254, 259-268, 273-284, 289-299, 304-314, 319-332, 337-348, 353-366, 371-384, 386, 394-404, 409-415, 417-419, 424-426, 428-443, 451-452, 456-457, 464-478, 484-499, 501-508, 510-511, 513-514, 517-522, 525-530, 532-533, 536-537, 538-540, 542-543, 545-546, 548-549, 551-554, 561, 569-570, and attachments 3, 4, 7, 16, and 19 be found inadmissible in this proceeding. After hearing submissions from both parties, the Court indicated that it would rule formally on this objection as part of its reasons and judgment.

[592] Arctic Cat claims that Mr. Breen opines on legal issues and makes conclusions of law. Arctic Cat complains of all the above-listed items other than attachments 3 and 4. As an expert witness, Mr. Breen is to assist the Court as a technical guide and not to provide opinions on legal issues of infringement and claim construction, as this amounts to a usurpation of the role of the Court: *Halford v Seed Hawk Inc.*, 2001 FCT 1154 at para 24, 16 CPR (4th) 189; *R. v Abbey*, [1982] 2 SCR 24 at 42.

[593] The fourth ground of objection relates solely to attachments 3 and 4. Attachments 3 and 4 are reports produced by another expert witness, Mr. Robert Larson, which were provided to Mr.

Breen for the writing of his Expert Report. Each attachment relates to an Arctic Cat snowmobile that Mr. Larson assessed in 2012 (assessments of other AC snowmobiles on behalf of BRP were conducted after notice was given to AC; Counsel for AC chose to attend the measurements of 5 of the 15 snowmobiles measured in 2014). Arctic Cat argues that the assessments were tests that were conducted without notice to Arctic Cat and at which no representative of Arctic Cat was either invited to attend or was present. It submits that accepting evidence from what it considers to be testing conducted in such circumstances falls outside of both the practice of this Court and a Notice to the Parties and the Profession from the Chief Justice: *Omark Industries (1960) Ltd. v Gouger Saw Chain Co.*, [1964] 1 Ex.C.R. 457 at para 204, 45 C.P.R. 169 [*Omark*]; *The Dow Chemical Company v Nova Chemicals Corporation*, 2012 FC 754 at para 58; The Honourable Paul Crampton, Notice to the Parties and the Profession, "Experimental Testing" (February 27, 2014), online: <http://cas-ncr-nter03.cas-satj.gc.ca/portal/page/portal/fc_cf_en/Notices/IP-experimental-testing>.

[594] Unsurprisingly, BRP does not share the view that the portions of Mr. Breen's Expert Report identified by Arctic Cat are inadmissible. Concerning the admissibility of reports containing assertions on questions of law, it argues that there is no rule of general application mandating the automatic exclusion of expert evidence following the decision of *R. v Mohan*, [1994] 2 SCR 9. It submits that the evidence is receivable, but that the Court is not bound by the statements made in the Report and is free to weigh the value of the evidence and then adopt or reject any if it as it sees fit: *Xerox of Canada Ltd. v IBM Canada Ltd.*, [1977] FCJ No. 603 at para 28, 33 C.P.R. (2d) 24 [*Xerox*]; *Rucker Co. v Gravel's Vulcanizing Ltd.*, [1985] FCJ No. 1031; 7 CPR (3d) 294 at 315-316.

[595] On the last objections, BRP submits that the assessment conducted by Mr. Larson in 2012 should not be characterized as experimental testing, but rather as the taking of certain measurements. BRP also relies on *Omark*, but to show that measurement data, unlike testing data, collected without the opposing party's knowledge or presence need not be excluded: page 208. Furthermore, BRP argues that since the snowmobiles tested in attachments 3 and 4 were Arctic Cat machines, that company would have been better than able to conduct its own measurements if desired.

[596] After considering the submissions and jurisprudence provided by the parties, the Court is of the view that the paragraphs and attachments objected to by Arctic Cat are not inadmissible. There is no rule of evidence or rule of the Court mandating that expert evidence must be excluded where the expert strays into the province of the Court by opining on the legal issues before the Court: see *Mohan* at pages 24 and 25. The rule excluding expert evidence that concerns the ultimate issue is no longer of general application. That, however, is not to suggest that the concern has disappeared. Indeed trial judges are particularly vigilant in trial with juries, where there exists the risk that the evidence of experts could overwhelm the trier of fact and distract the jury from their task. Anyhow, the Court is never bound by such opinion and remains solely responsible for determining the issues before it: *Xerox* at paragraph 28.

[597] It follows that the weight to be given to the identified sections of the Expert Report remains to be assessed and the evidence does not escape probing scrutiny. The Supreme Court noted in *Mohan* at para 28, and the passage was specifically referred to in *R. v J.-L. J.*, 2000 SCC 51 at para 37, [2000] 2 SCR 600, that "[t]he closer the evidence approaches an opinion on an ultimate issue,

the stricter the application" of scrutiny it requires. As discussed in A. W. Bryant, S.N. Lederman, and M.K. Fuerst, *The Law of Evidence in Canada* (3rd ed. 2009) at §12.156 "there are certain subject matters which go to the very heart of judicial decision-making and courts remain wary of expert witnesses providing advice as to how they should decide issues such as whether a witness is telling the truth or the meaning of English words." In a patent proceeding, expert testimony opining on the construction to be given to patent claims and whether infringement has occurred or not deserves such wariness and heightened scrutiny. On the other hand, an expert who testifies on the construction of patents or whether a patent has been infringed will inevitably come close to giving his view on the ultimate issue.

[598] In his report, Mr. Breen crosses occasionally the line from being an expert witness offering information to assist the Court to being somewhat of a supporter of BRP's position in the litigation. I add that he was not alone as experts for Arctic Cat also were guilty of degrees partisanship. For instance, Mr. Breen finds that "the terms and language used in the claims of all the patents at issue are generally clear, unambiguous and would be readily understood by the persons skilled in the art" (Expert Report of Kevin Breen at paragraph 71) and makes multiple conclusions that certain models of Arctic Cat snowmobiles infringe the Patents (e.g., his conclusion at paragraph 289 that "[a]ll Twin Spar models measured fall within the scope of claim 20 of the 106 patent. Therefore, claim 20 of the 106 Patent is infringed …"). However, these conclusions are merely a recognition that, according to the measurements made and on which he relied, the said measurements fell within the range set in the claims being examined.

[599] As to the last objection, the Court is also of the view that the evidence contained in attachments 3 and 4 of Mr. Breen's Expert Report should not be excluded. As in *Omark*, there is an element of measurement present in the assessment undertaken by Mr. Larson, rather than a purely experimental testing. To put it in another way, Arctic Cat never made the case that the measurements taken were in the nature of experiments in experimental testing. The bold assertion that measurements are experimental testing fell short of the mark.

[600] Furthermore, during an examination for discovery conducted January 22, 2014, where the 2012 assessments by Mr. Larson were discussed, counsel for BRP [Mr. Nitoslawski] offered to redo it if counsel for Arctic Cat [Ms. Furlanetto] had any questions. The following excerpt reflects this offer:

> Ms. ANGELA M. FURLANETTO:
>
> Arctic Cat was not invited to attend the testing?
>
> Mr. MAREK NITOSLAWSKI:
>
> You can go on the record to say that.
>
> Ms. ANGELA M. FURLANETTO:
>
> So the answer is no, they were not?
>
> Mr. MAREK NITOSLAWSKI:
>
> No, they were not, but if Arctic Cat has any questions about the testing we could redo them with Arctic Cat present, as well.

[601] Given the failure of Arctic Cat to take BRP up on this invitation, the Court finds it difficult to sanction and exclude the evidence in question.

[602] Finally, the jurisprudence and notice to the parties and to the profession speak to the general practice of the Court and not to a rule of the Court or to a rule of evidence that mandates the automatic exclusion of the testing evidence. As noted by Justice Hughes in *Abbvie Corporation v Janssen Inc.*, 2014 FC 55 at para 64 [*Abbvie*], there is no rule in the *Federal Courts Rules*, S.O.R./98-106 specifically directed to the admissibility of experimental testing. The common law rules of evidence do require the exclusion of evidence where the prejudicial effect of that evidence surpasses its probative value: see, for example, *R. v Ferris*, [1994] 3 SCR 756; *Harmony Consulting Ltd. v G A Foss Transport Ltd.*, 2012 FCA 226 at para 101.

[603] This is not such a case where the possible prejudicial effect in admitting attachments 3 and 4 exceeds the probative value in those documents. This is especially so given that the evidence in question relates more to measurement than to experimental testing and that Arctic Cat had ample opportunity either to ask questions of BRP regarding the assessments and to have them redone, or to conduct its own measurements or tests. Where a party "could have performed [its own measurements] in the same manner with a similar comparator" the Court is not inclined to reject the evidence before it: *Omark* at page 228; see also *Abbvie* at para70 and *Apotex Inc. v Pfizer Canada Inc.*, 2013 FC 493 at para 39. The snowmobiles assessed in attachments 3 and 4 were manufactured by Arctic Cat and there is no evidence before this Court that the company did not have models of its own to measure. Indeed, the 17 snowmobiles measured by BRP were sent to the expert retained by Arctic Cat. The evidence from attachments 3 and 4 is, accordingly, admissible in this proceeding subject to determinations of weight and value.

VIII. Conclusion

[604] As in *Teva*, this Court has reached the conclusion that the 106 Patent, the 813 Patent and the 964 Patent do not comply with s. 27(3) of the *Patent Act* in that their disclosure does not meet the conditions that they describe the invention and define the way they are produced or built. The Patents are concerned with the design and the construction of a snowmobile, yet they say very little about the snowmobile, its design and construction, relying instead on the results the inventors claim will be produced by the new configuration in terms of the positioning of the standard rider. The reader does not know what is invented other than a snowmobile that has a new design and construction. How does that help that the three Patents declare that "an exhaustive description of each and every component is not provided, only a description of those elements required for an understanding of the present invention".

[605] Furthermore, the Patents-in-suit do not describe how the inventions are put into operation. The inventors claim a snowmobile. The only information provided is a number of measurements, without any indication in the nature of setting out clearly the method of constructing that new snowmobile. The fact that the various measurements are provided by the inventors in ranges compounds the difficulty. The Supreme Court in *Pioneer Hi-Bred* was satisfied that the failure to describe how the invention is put into operation results in invalidity for insufficiency. That was fully endorsed in *Teva*:

> [84] Although s. 27 does not specify a remedy for insufficient disclosure, the logical consequence of a failure to properly disclose the invention and how it works would be to deem the patent in question invalid. This flows from the quid pro quo principle underpinning the Act. If there is no quid — proper disclosure — then there can be no quo — exclusive monopoly rights.

[606] As for the 4th patent, the 264 Patent, the Court concludes that it was not infringed by Arctic Cat because the accused snowmobiles have not been shown to have one of the essential elements of the invention as claimed, the engine cradle of the 264 Patent.

[607] As a result, the action in infringement of the 106 Patent, the 813 Patent, the 964 Patent and the 264 Patent of Bombardier Recreational Products Inc. against Arctic Cat Inc. and Arctic Cat Sales Ltd. is dismissed with costs. The parties have indicated to the Court that they wish to make specific submissions on costs after a decision has been rendered.

JUDGMENT

THIS COURT'S JUDGMENT is that

1. The action in infringement is dismissed;

2. A declaration is made that Arctic Cat does not infringe the asserted claims of the 264 Patent;

3. A declaration is made that the asserted claims of the 106, 813 and 964 Patents are and have been invalid and void;

4. A direction is hereby issued to the Commissioner of Patents to make an entry to that effect;

5. Arctic Cat is entitled to its costs. The parties are invited to offer submissions on costs, limited to five pages, within 20 days from the issuance of this Judgment.

"Yvan Roy"
Judge

FEDERAL COURT

SOLICITORS OF RECORD

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