UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CAREFUSION CORPORATION,

Petitioner,

v.

BAXTER INTERNATIONAL, INC.,

Patent Owner.

Patent No. 5,764,034

Issue Date: June 9, 1998

Title: BATTERY GAUGE FOR A BATTERY OPERATED INFUSION PUMP

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 5,764,034

UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1-.80 & 42.100-.123

TABLE OF CONTENTS

Petitioner CareFusion Corporation ("CareFusion" or "Petitioner") respectfully petitions for *inter partes* review of claims 1-4 and 9-12 of U.S. Patent No. 5,764,034 ("the '034 patent") (Ex. 1001) in accordance with 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 *et seq*.

I. COMPLIANCE WITH REQUIREMENTS FOR A PETITION FOR *INTER PARTES* REVIEW

A. Grounds for Standing (37 CFR § 42.104 (a))

Petitioner certifies it is not barred or estopped from requesting *inter partes* review of the '034 patent. Neither Petitioner, nor any party in privity with Petitioner, has filed a civil action challenging the validity of any claim of the '034 patent. The '034 patent has not been the subject of a prior *inter partes* review by Petitioner or a privy of Petitioner.

Petitioner also certifies this petition for *inter partes* review is filed within one year of the date of service of a complaint alleging infringement of a patent. Petitioner was served with a complaint alleging infringement of the '034 patent on or about November 9, 2015, captioned No. 1:15-cv-9986 in the U.S. District Court for the Northern District of Illinois. A copy of Baxter's original Complaint is attached hereto as Ex. 1009.

Because the date of this petition is less than one year from November 9, 2015, this petition complies with 35 U.S.C. § 315(b).

B. Fee for *Inter Partes* Review (37 CFR § 42.15(a))

The Director is authorized to charge the fee specified by 37 CFR § 42.15(a) to Deposit Account No. 06-1910.

C. Mandatory Notices (37 CFR § 42.8(b))

i. Real Party in Interest (37 CFR § 42.8(b)(1))

The real parties in interest for this petition are Petitioner CareFusion Corporation, located at 3750 Torrey View Court, San Diego, California 92130, and/or its corporate parent Becton, Dickinson and Company, located at 1 Becton Drive, Franklin Lakes, New Jersey 07417.

ii. Other Proceedings (37 CFR § 42.8(b)(2))

The '034 patent is the subject of a civil action in the U.S. District Court for the Northern District of Illinois, captioned *Baxter International, Inc. v. CareFusion Corporation and Becton, Dickinson and Company*, No. 1:15-cv-9986 ("the district court lawsuit").

iii. Designation of Counsel and Service Information (37 CFR §§ 42.8(b)(3)-(4))

Petitioner identifies the following counsel (a power of attorney accompanies this Petition):

Lead Counsel	Backup Counsel
Kurt J. Niederluecke Reg. No. 40,102 kniederluecke@fredlaw.com (612) 492-7328 Fredrikson & Byron, P.A. 200 South 6th Street, Suite 4000 Minneapolis, MN 55402	Adam R. Steinert *pro hac vice* to be filed asteinert@fredlaw.com (612) 492-7436 Nikola L. Datzov *pro hac vice* to be filed ndatzov@fredlaw.com (612) 492-7889 Fredrikson & Byron, P.A. 200 South 6th Street, Suite 4000 Minneapolis, MN 55402

Service information for counsel is provided above. Counsel may also be served by fax at (612) 492-7077.

D. Proof of Service (37 CFR §§ 42.6(e) and 42.105(a))

Proof of service of this Petition is provided in **Attachment A**.

II. INTRODUCTION AND IDENTIFICATION OF THE CLAIMS BEING CHALLENGED (37 CFR § 42.104(B)(1))

This is a petition for *inter partes* review of claims 1-4 and 9-12 of the ’034 patent, titled “Battery Gauge for a Battery Operated Infusion Pump,” issued on June 9, 1998, to Bowman et al. and assigned to Baxter International, Inc. (“Baxter”). A copy of the ’034 patent is included as Exhibit 1001. The ’034 patent is generally directed to monitoring and notifying the user of the amount of charge time left on a battery in an infusion pump.

The ’034 patent has four independent claims: claims 1, 6, 9 and 13. Claims 1, 6, and 13 are apparatus claims, and claim 9 is a method claim. This challenge is directed at claims 1-4 and 9-12. Claim 1 is representative of the alleged invention:

> 1. An infusion pump comprising:
>
> a pump drive mechanism for applying the pumping action to a liquid for infusion in a patent;
>
> a battery for powering the pump drive mechanism;
>
> a circuit which monitors the voltage and current from the battery;
>
> a circuit responsive to the monitoring circuit which determines the remaining time of charge in the battery;
>
> a battery alarm which occurs when the remaining time of charge in the battery is below a predetermined level;
>
> a battery low alert which occurs when the remaining time of charge in the battery is below a predetermined level but above the battery alarm level; and
>
> display means for displaying the remaining time of charge in the battery.

(Ex. 1001, Cl. 1.)

In describing the alleged invention, the specification of the ’034 patent explains that battery monitoring for infusion pumps was well known in the art:

> While pumps have included battery monitoring capabilities in the past, such monitoring capabilities only measured the available voltage from the battery. When the voltage decreased to below a predetermined value, a battery low alert was sounded. When the

> voltage decreased below a predetermined critical value, a battery alarm sounded.

(Ex. 1001, col. 1, ll. 54-60.)

The prior art references cited and discussed in this petition for *inter partes* review are: (1) two patents directed to infusions pumps with battery monitoring functions—one of which belongs to CareFusion's predecessor; (2) a publication directed to battery monitoring; and (3) a datasheet for a battery monitoring chip.

The first cited patent ("Layman") is based on the prototype of CareFusion's prior art Signature Edition infusion pump, and it is specifically directed to the pump's battery monitoring and alert features and functionality. CareFusion denies that the battery monitoring and alert features of its accused Alaris system fall within Baxter's claims, but if they do, the '034 patent is at least rendered obvious by CareFusion's prior invention of the accused features for use in prior art pumps. The second cited patent ("Gargano") is similarly directed to an infusion pump with a battery management circuit that provides indications, alarms, and alerts of the remaining time of battery life.

The prior art publication directed to battery monitoring comprehensively explains the state of the art at the time of the alleged invention and demonstrates that calculating remaining battery time for a nickel-cadmium ("NiCd") battery using current measurements was well known. The prior art battery monitoring

chip datasheet is for a commercially-available chip at the time of invention, which, in the district court lawsuit, Baxter asserts covers numerous claim limitations of the '034 patent. (Ex. 1012 at APP0444, 447-453, 457-466, 470-474, 479-484.)

It would have been obvious to one of ordinary skill in the art to combine Gargano's battery alert system with the infusion pump described in Layman, at least because both inventions are in the same field of endeavor. Indeed, both inventions specifically disclose battery monitoring and notification features in infusion pump systems. Moreover, the remaining references demonstrate that battery monitoring capabilities were well known and available for numerous applications, including electronic devices such as infusion pumps which use NiCd or other rechargeable batteries. Since the batteries in infusion pumps function in the same manner as rechargeable batteries in other electromechanical devices, it would have been obvious to a person of ordinary skill in the art to implement the battery life monitoring features and functionality available for other devices powered by similar batteries in an infusion pump. (*See* Ex. 1003 ¶ 13.)

Thus, the references relied on herein raise a reasonable likelihood that CareFusion will prevail with respect to at least one challenged claim, and CareFusion's petition for *inter partes* review of the '034 patent should be granted.

III. BACKGROUND OF THE '034 PATENT

A. Effective Filing and Priority Dates of the '034 patent

The '034 patent issued from U.S. Application No. 08/630,359, with a filing date of April 10, 1996. The '034 patent does not claim priority to any earlier application. Accordingly, Petitioner states that the priority date for the '034 patent is April 10, 1996, and that the '034 patent expired on April 10, 2016.

Under the scheduling order in the district court lawsuit (Ex. 1010 at APP0418) and Northern District of Illinois Local Patent Rule 2.1(a)(2) (Ex. 1011 at APP0427), Baxter was required to produce "all documents concerning the conception, reduction to practice, design, and development of each claimed invention" in the '034 patent by June 10, 2016. Baxter's production does not include documents sufficient to establish either conception or diligent efforts to reduce the '034 claims to practice prior to the Layman reference's filing date of October 2, 1995. *See generally, e.g., Microsoft Corp. v. SurfCast, Inc.*, IPR2013-00292, Paper No. 93, at 15-21 (Oct. 14, 2014).

B. Prosecution History and Alleged Invention

The file history for the '034 patent is particularly helpful in understanding the narrow grounds of what Baxter claims it invented. A copy of the file history is attached hereto as Exhibit 1002.

During the prosecution, the examiner repeatedly rejected Baxter's application over prior art infusion pumps with battery monitoring circuits and other battery-powered devices that monitored the charge left in the battery. After numerous amendments to the claims in response to obviousness rejections, the only aspect of the '034 patent that the examiner considered inventive was providing low battery alerts and alarms based on "the remaining time of charge" left on the battery, rather than the remaining charge itself, and a specific algorithm for calculating the remaining time of charge.

In the first office action, the examiner explained that prior art "disclose[s] a[n] infusion pump with a battery monitoring circuit" and "teaches ... provid[ing] a monitoring circuit with a current measurement (sampling) and remaining charge determination." (Ex. 1002 at APP0132.) As such, "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made ... to provide a[n] infusion pump battery with a remaining capacity indication ...." (*Id.*)

To overcome the rejection, Baxter amended its claims and explained that "[t]he voltage of the battery and the current flow from the battery are monitored and utilized as inputs to determine the amount of charge remaining in the battery." (*Id.* at APP0140.) "[T]he process calculates the remaining amphours in the battery [and] utilizes this information to calculate the remaining minutes left in the battery." (*Id.* at APP0141.) The examiner again rejected all pending claims and

explained that prior art "teaches []a battery charge evaluator with a voltage monitoring (sampling) circuit (22), current monitoring (sampling) (23) circuit, a microcomputer (16) for determining remaining charge (see the abstract) and a display (34) in figure 1." (*Id.* at APP0150.)

After another amendment to the claims, the examiner once again found the claims obvious in light of the existing state of the art. (*Id.* at APP0163-69.) The examiner explained that

> [it] would have been obvious to one having ordinary skill in the art at the time of invention ... to provide the user an indication (an alert) of when the charge of the battery is approaching a level where it will not be able to provide adequate power for the device to function and to further provide an indication of when the charge of the battery has reached the level where it is even nearer to the level where it will not be able to provide adequate power for the device to function.

(*Id.* at APP0169.) Furthermore, the examiner noted that prior art "teaches of a battery monitoring system with a microprocessor which determines the remaining minutes of charge left in the battery." (*Id.* at APP0168.) As such, it would have been obvious to "provide a way to accurately give an indication of the remaining time the battery will be able to provide power to the device." (*Id.*)

To get past the examiner's rejections, Baxter amended its claims and narrowed the alleged invention to an alert and alarm in an infusion pump based on "the remaining time of charge" in the battery, rather than the level of remaining

charge itself. (*Id.* at APP0174-175.) The examiner accepted Baxter's argument, and expressly allowed the '034 patent on the limited grounds of such an alert and alarm:

> Prior art of record does not disclose or suggest the battery alarm *when the time of charge left* on a battery is below a predetermined level and a battery low alert which occurs *when the remaining time of charge left* on the battery is below a predetermined level, but above the battery alarm level as claimed in claims 1, 4, and 11 [issued claims 1, 6, and 9]; and a microprocessor functioning to calculate a remaining time of charge *in accordance with the algorithms claimed in claim 24 [issued claim 13]*.

(*Id.* at APP0204) (emphasis added).

In light of the prosecution history alone, there can be no dispute that voltage measurements, current measurements, battery gauges, and low-battery alerts were all well-known features for battery monitoring long before Baxter filed its patent application. As the patent examiner recognized, all that is left of Baxter's alleged invention is the alarm and alert based on the calculation of "remaining time of charge" from the voltage and current measurements.

C. Person of Ordinary Skill in the Art

A person of ordinary skill in the art of designing infusion pump battery systems in the 1996 time frame would have education and research/industry experience in biomedical engineering and at least 2 years' experience designing

hardware, software and/or firmware for electrical devices in the biomedical industry. (*See* Declaration of Yangming Xu dated July 14, 2016 ("Xu Decl."), attached as Exhibit 1003, ¶ 8.)

D. Knowledge of Ordinary Skill in the Art Regarding Analog-to-Digital Conversion

By the 1990s, the subject of converting analog signals to digital values was well-known and thoroughly explained in numerous textbooks and other publications. For example, the Electronic Analog-to-Digital Converters textbook, by Dieter Seitzer (hereinafter "Seitzer Textbook," attached as Ex. 1008) teaches that "the purpose of analog-to-digital conversion [is] to provide the necessary link to digital systems wherever [analog] signals are to be processed, stored, and/or transmitted on a digital medium." (Ex. 1008 at APP0397.) It further notes that "[t]he most popular application of A/D converters is in the field of digital multimeters (DMM), where the magnitude of a voltage, current, or resistance is directly displayed in decimal form." (*Id.* at APP0399.)

The Seitzer Textbook explains that "while the pointer reading of a voltmeter in an analog representation is continuous, the reading in a digital representation is discrete, i.e. it is limited to a finite set of values (numbers)." (*Id.* at APP0398.) As such, a "sample-and-hold circuit (S/H) must take samples periodically from the analog input signal." (*Id.* at APP0402.) Stated differently, "[d]igital representation of a signal can be considered as replacing a continuous voltage $V(t)$ (Fig. 2.1(a)) by

a periodical sequence of samples (time quantization) whose amplitudes can assume a limited number of levels (amplitude quantization)." (*Id.* at APP0404.) Below is a "[f]undamental structure for A/D conversion":

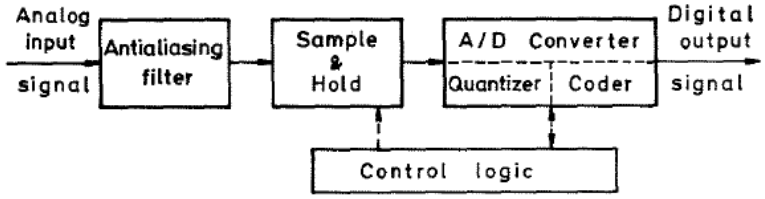


Fig. 1.8 Fundamental structure for A/D conversion

(*Id.* at APP0402.)

Overall, "the function of an A/D converter is to create a discrete signal both in time and amplitude from the originally continuous signal and then to assign the obtained discrete amplitudes to a desired code." (*Id.*)

Finally, the Seitzer Textbook makes clear that even in 1983, A/D conversion was common in computer and electronic devices: "[I]n areas such as instrumentation and process control, A/D conversion has to be carried out on computers. This is now considered to be a conventional or standard type of application." (*Id.* at APP0405.) A diagram for a typical interaction between a microcomputer and an external signal is disclosed:

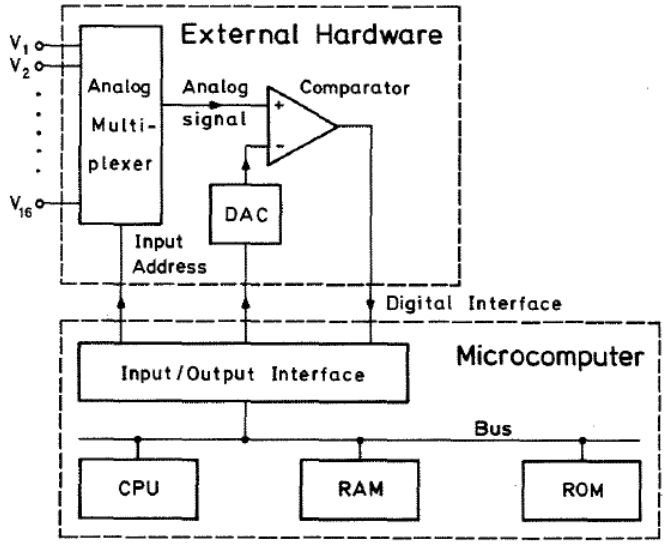


Fig. 3.58 Microcomputer structure extended by external hardware for A/D conversion via standard input/output interface

The figure depicts "a standard microcomputer containing a central processing unit (CPU), a random access memory (RAM), a read-only memory (ROM), and an input/output building block .... The ROM stores the software, i.e. the program according to which the conversion is carried out. The read/write memory (RAM) is used to store the results of the A/D conversion. The central processing unit organizes the co-ordination of all units in the system." (*Id.* at APP0405-0406.)

IV. CLAIM CONSTRUCTION (37 CFR § 42.104(B)(3))

In this proceeding, claims must be interpreted in light of the claim construction standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See, e.g., Google Inc. v. CreateAds, LLC*, IPR2014-00200, Paper No. 19, at 2 (July 16, 2014) ("Because the claims of an expired patent are not subject to amendment, the Board's review of such claims applies the principles set

forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005)."); *see also In re Rambus, Inc.*, 753 F.3d 1253, 1256 (Fed. Cir. 2014) (citing same standard for an expired patent in reexamination proceeding).

Claim construction begins with the words of the claims. *See Phillips*, 415 F.3d at 1312 ("It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude." (internal citations omitted)). "The claims, of course, do not stand alone [and] ... must be read in view of the specification, of which they are a part." *Id.* at 1315 (internal quotation marks omitted). "[T]he specification is always 'highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). In addition to consulting the specification, the Board "should also consider the patent's prosecution history." *Id.* at 1317 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995)).

Unless stated otherwise below, CareFusion contends that each term in the claims should be given its plain and ordinary English meaning.

A. "a circuit responsive to the monitoring circuit"

Claim 1 recites "a circuit which monitors the voltage and current from the battery" and "a circuit responsive to the monitoring circuit which determines the remaining time of charge in the battery."

During the prosecution of the '034 patent, Baxter twice explained that "[t]he voltage of the battery *and* the current flow from the battery are monitored and *utilized as inputs* to determine the amount of charge remaining in the battery." (Ex. 1002 at APP0140, 0178 (emphasis added).) Similarly, in the district court lawsuit, Baxter has taken the position that "'monitoring circuit means' is easily understood by a person of ordinary skill in the art to refer to the monitoring circuit of claim [1d]," which monitors both voltage and current. (Ex. 1012 at APP0457.) This is consistent with the language in claim 2, which refers to "monitoring circuit means" and requires sampling both "the voltage and the current of the battery." CareFusion agrees that "monitoring circuit" must be understood to mean the circuit in the preceding limitation which "monitors the voltage and current from the battery." (Ex. 1001, col. 15, ll. 40-41.)

Therefore, the term "a circuit responsive to the monitoring circuit which determines the remaining time of charge in the battery" should be construed as "a circuit that determines the remaining time of charge in the battery based on both the monitored voltage and monitored current."

B. "display means for displaying the remaining time of charge"

Claim 1 recites the limitation of "display means for displaying the remaining time of charge." "It is well settled that a claim limitation that actually uses the word 'means' invokes a rebuttable presumption that § 112, ¶ 6 applies." *Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1371 (Fed. Cir. 2015) (internal quotation marks omitted). As such, "means for displaying the remaining time of charge" should be construed to be a means-plus-function limitation.

"Construction of a means-plus-function limitation includes two steps. 'First, the court must determine the claimed function. Second, the court must identify the corresponding structure in the written description of the patent that performs the function.'" *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012) (quoting *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332 (Fed. Cir. 2006) (internal citations omitted)).

In the district court lawsuit, Baxter has taken the position that for this means-plus-function element, "the function is displaying the remaining time of charge in the battery [and t]he structure in the '034 Patent specification is an LCD that displays the hours remaining upon request." (Ex. 1012 at APP0456.) CareFusion agrees that the function is "displaying the remaining time of charge in the battery" and the structure disclosed in the '034 patent is an LCD.

C. "means for sampling"

Claim 2 recites the limitation of a "means for sampling the voltage and the current of the battery." (Ex. 1001, col. 15, ll. 52-53.) As noted above, use of the word "means" creates the presumption that this element is a means-plus function.

In the district court lawsuit, Baxter has taken the position that for this means-plus-function element, "the function is sampling the voltage and the current of the battery [and t]he structure in the '034 Patent is an analog-to-digital converter (202) which samples current or voltage under control of a control circuit (216)." (Ex. 1012 at APP0460.)

In light of the above, the Board should find that the function is sampling the voltage and current of the battery and the structure disclosed in the '034 patent is an analog-to-digital converter.

D. "means for alternatively sampling"

Claim 3 recites the limitation of a "means for alternatively sampling the voltage of the battery and the current from the battery." (Ex. 1001, col. 15, ll. 54-56.) As noted above, use of the word "means" creates the presumption that this element is a means-plus-function.

In the district court lawsuit, Baxter has taken the position that for this means-plus-function element, "the function is alternatively sampling the voltage of the battery and the current from the battery [and t]he disclosed structure in the '034

Patent for alternatively sampling is a switch that selects among the inputs (voltage and current), based on the decision of the Control circuit (216)." (Ex. 1012 at APP0465.) Furthermore, Baxter explained that because the LTC1325 chip used in the accused products "contains a single ADC [it] ***must*** alternatively measure voltage and current." (*Id.* at APP0463 (emphasis added).)

In light of the above, the Board should find that the function is alternatively sampling the voltage of the battery and the current from the battery and the structure disclosed in the '034 patent is a switch that selects among analog inputs such as voltage and current.

V. IDENTIFICATION OF SPECIFIC STATUTORY GROUNDS FOR CHALLENGE (37 CFR § 42.104(B)(2))

CareFusion respectfully requests the cancellation of claims 1-4 and 9-12 of the '034 patent. The statutory grounds for the challenge are set forth below (all citations are to pre-AIA statutes):

Ground	35 USC §	Claims	References
1	103(a)	1-4 and 9-12	Layman (Ex. 1004) in view of Gargano (Ex. 1005)
2	103(a)	1-4 and 9-12	Layman (Ex. 1004) in view of Gargano (Ex. 1005), in further view of the LTC1325 datasheet (Ex. 1007)
3	103(a)	1-4 and 9-12	Layman (Ex. 1004) in view of Gargano (Ex. 1005), in further view of the EDN Publication (Ex. 1006)

VI. DETAILED EXPLANATION AND EVIDENCE SUPPORTING GROUNDS FOR CHALLENGE (37 CFR §§ 42.104(B)(4)-(5))

A. Ground 1: Obviousness of Claims 1-4 and 9-12 Based on Layman, in view of Gargano

Claims 1-4 and 9-12 are obvious under 35 U.S.C. § 103(a) in view of Layman and Gargano.

i. Disclosure of Layman

The Layman patent (U.S. Patent No. 5,712,795, attached as Ex. 1004) is directed to the battery monitoring and alert features of CareFusion's prior art Signature Edition pump, which includes much of the same functionality that Baxter accuses of infringement in the district court lawsuit. (*See* Ex. 1003 ¶¶ 6-7; Ex. 1012 at APP0444-84.) Layman issued from U.S. Patent Application No. 08/538,096, which was filed on October 2, 1995. (Ex. 1004 at 0242.) As discussed in Section III(A), above, Baxter has not produced sufficient evidence supporting conception or efforts to reduce the claimed invention to practice prior to Layman's filing date. Accordingly, Layman is prior art under at least pre-AIA 35 U.S.C. § 102(e).

Layman teaches a power management system to "operate a biomedical device, such as an infusion pump containing an internal battery" and which "automatically calculates battery charge status and use" to "provide[] a run time display of the calculated amount of time that the battery can operate." (Ex. 1004 at

0242.) The power management system also "updates the calculated charge status of the battery as well as the calculated capacity of the battery based on environmental factors and battery characteristics." (*Id.*)

The Layman system includes a processor that "monitors the capacity of the battery and calculates the charge remaining in the battery based on charging activities and usage." (*Id.*, col. 2, ll. 58-60.) Layman teaches that battery capacity and charging activities are calculated by "closely monitor[ing] the battery voltage sensor 49, battery current sensor 50, and battery temperature sensor 51." (*Id.*, col. 4, ll. 55-58.) "A determination of the run time of the battery is [made] based on the amount of charge remaining in the battery and the present current draw from the battery." (*Id.*, col. 7, ll. 17-20.) "As [an] example, the actual current leaving the battery can be directly measured by an electrical circuit well known to those skilled in the art. The battery current sensor 50 is such a circuit and provides a signal to the processor representative of the current drawn from the battery 26." (*Id.*, col. 7, ll. 21-26.) Similarly, "[t]he battery voltage sensor 49 continuously monitors the battery voltage and provides a representative signal to the processor 42." (*Id.*, col. 11, ll. 3-5.") "Such circuits [were] well known to those skilled in the art." (*Id.*, col. 4, ll. 58-59.) "[T]he processor calculates the run time of the battery and displays the run time." (*Id.*, col. 2, ll. 62-65.) The "display includes

the run time gauge indicating in time increments how much time remains in the battery." (*Id.*, col. 3, ll. 25-27.)

As with any infusion pump, Layman explains that the "infusion pump includes a drive mechanism 18 that forces fluid from the reservoir to the patient," such as "a linear peristaltic pump." (*Id.*, col. 3, ll. 63-66.)

ii. Disclosure of Gargano

As noted above, the narrow grounds of Baxter's alleged invention in the '034 patent are providing an alarm and alert based on the remaining time of charge in the battery. To the extent such an alleged invention constitutes patentable subject matter, it is disclosed by Gargano, or would at least be obvious to a person of ordinary skill in the art under Gargano.

U.S. Patent No. 5,814,015 (hereinafter "Gargano," attached as Ex. 1005) teaches "[a] processor driven [infusion] pump for one or more ... pumping stations ... [and which] features a central display." (Ex. 1005 at APP0278.) Gargano further teaches "software [that] provides a continuous indication of remaining battery life on the display." (*Id.*, col. 2, ll. 21-23.) "When on battery power, a battery icon is displayed with battery life in hours and minutes." (*Id.*, col. 7, ll. 37-38.) Remaining battery life is calculated "through a voltage regulator 78 for system power [and] a battery management circuit." (*Id.*, col. 7, ll. 32-34.) Gargano also teaches a battery alarm which occurs when "five minutes of battery

remain[]" and a battery alarm which occurs when the battery is depleted. (*Id.*, col. 20, ll. 12-16.)

iii. Rationale for Combining the Teachings of Layman and Gargano

A person of ordinary skill in the art of infusion pump battery monitoring design in 1996 would have readily understood the motivation to combine the infusion pump system of Layman with the specific alarms and alert features of the Gargano infusion pump.

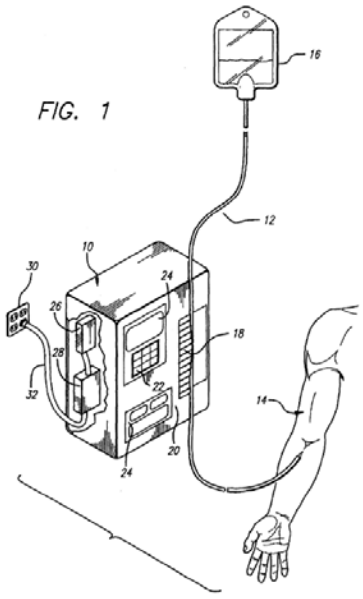
First, Layman and Gargano are each directed to an infusion pump system with battery life monitoring functionality. Specifically, each included the functionality for indicating the remaining time of battery life and alarming and alerting the user when that time ran low. Simply put, both systems sought to accomplish the same goals in the same type of devices. It is common for design and development engineers to look to devices that include similar features and functionality. (Ex. 1003 ¶ 13.) As such it would have been obvious for a person of ordinary skill to incorporate the teachings of both systems and provide various methods of alerting the user of the remaining time of battery life, such as based on the remaining time of charge. Indeed, the combination merely takes well-understood elements of infusion pumps and combines them in predictable ways to yield predictable results.

Second, the motivation to combine various features of different infusion pumps at the time is reflected in the business of two of CareFusion's predecessors—IVAC Medical Systems and IMED Corporation—who merged around the time of the alleged invention in large part to combine the different infusion systems into one integrated product. (Ex. 1003 ¶¶ 4-5.) As such, those of ordinary skill in the art were specifically looking to competing infusion systems for combining features and functionality.

Thus, it would have been obvious to one of ordinary skill in the art at the time of Baxter's alleged invention in 1996 to combine the Layman infusion system with the alarm and alert triggers of the infusion pump disclosed in Gargano. Such modification of the Layman system with the alarm and alert triggers disclosed by Gargano is merely a substitution of one known element for another to obtain predictable results. *See, e.g.*, M.P.E.P. § 2143. It also would have been obvious to combine battery monitoring functionality from other electronic devices because it would have been "[u]se of [a] known technique to improve similar devices in the same way." *See, e.g., id.*

iv. Comparison of Claims 1-4 and 9-12 to Layman and Gargano

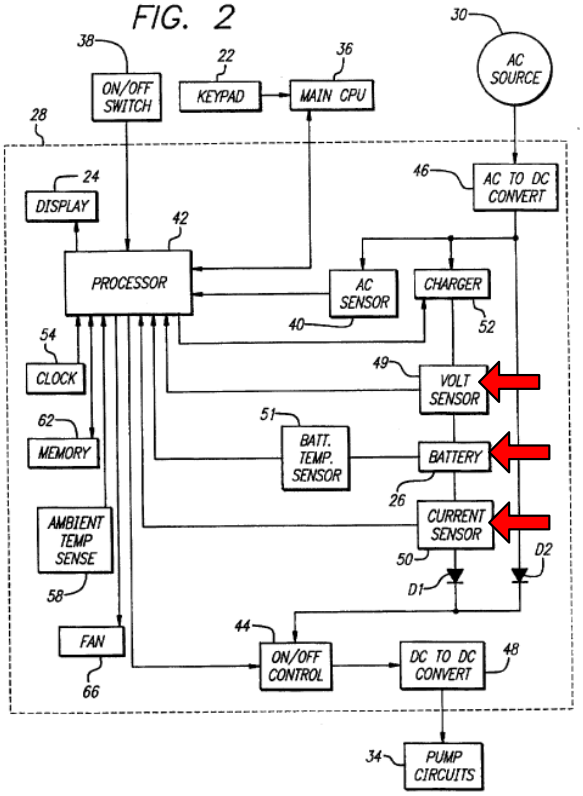
The claim chart below specifies where each element of claims 1-4 and 9-12 is met by the Layman and Gargano combination.

’034 Claim Language	Citations to Layman and Gargano
1[a]. An infusion pump comprising:	Layman states as follows: • “[T]here is shown in FIG. 1 a medical infusion pump 10 that operates on a fluid line 12 interconnecting a patient 14 and a reservoir of medical field 16 to be infused into the patient.” (Ex. 1004, col. 3, ll. 60-63.)  (Ex. 1004, Fig. 1.) Gargano also discloses an infusion pump: • Gargano explains that the disclosed invention is “an infusion pump system having one or more individually controlled pumps.” (Ex. 1005, col. 1, ll. 7-8.)
[1b.] a pump drive mechanism for applying the pumping action to a liquid for infusion in a patent;	Layman states as follows: • “The infusion pump includes a drive mechanism 18 that forces fluid from the reservoir to the patient. As one example, the drive mechanism may comprise a linear peristaltic pump and as another example, a syringe-type pump where the syringe comprises the reservoir. Other types of mechanisms may be used.” (Ex. 1004, col. 3-4, ll. 63-1.)

	Gargano also discloses this limitation: • Another type of pump module ... is a volumetric pump module like a peristaltic pump module 616B or a volumetric cassette pumping module (not shown) which enables continuous infusion of large volumes." (Ex. 1005, col. 5, ll. 33-37.) • "Regardless of configuration, each pump module 616A, 616B contains a pumping mechanism ..." (Ex. 1005, col. 5, ll. 39-41.)
[1c.] a battery for powering the pump drive mechanism;	Layman states as follows: • "Inside the pump, shown in broken-away form, is a battery and a power management system 28, to be described in detail below. The power management system 28 is shown connected to the battery ... and controls the pump 10 to operate ... on battery power if external power is not available." (Ex. 1004, col. 4, ll. 3-9.) • "The system includes a rechargeable battery and automatically determines the power source used to supply power to the biomedical device." (Ex. 1004, col. 2, ll. 40-43.) Gargano also discloses this limitation: • "The battery 58 provides operating power to the entire system through the main CPU board 46 ...." (Ex. 1005, col. 7, ll. 10-11.) Furthermore, the control unit "provides battery power to the individual modules 616A, 616B." (*Id.*, col. 6, ll. 1-2.)
[1d.] a circuit which monitors the voltage and current from the battery;	Layman provides as follows : • FIG. 2 of the Layman is a block diagram illustrating elements of a power management system 28. (Ex. 1004, col. 3, ll. 41-43.) FIG. 2 shows both a voltage sensor 49 and a battery current sensor 50 coupled to the battery 26. FIG. 2 is annotated and reproduced

below:

FIG. 2



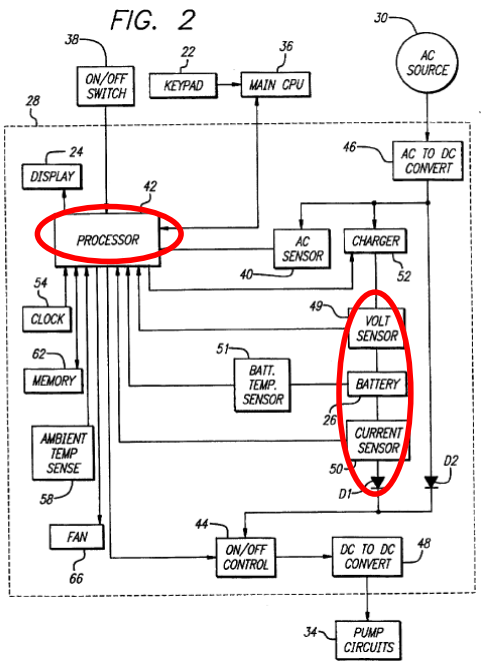
- FIG. 4A-1 through 4B-6 provide more specific examples of such circuits.

- "The power management system 28 closely monitors the battery 26 voltage [and] current ... by means of the battery voltage sensor 49 [and] battery current sensor 50 .... Such circuits are well known to those skilled in the art and no further details are provided herein." (Ex. 1004, col. 4, ll. 54-59.)

- "The battery voltage sensor 49 continuously monitors the battery voltage and provides a representative signal to the processor 42." (Ex. 1004, col. 11, ll. 3-5.)

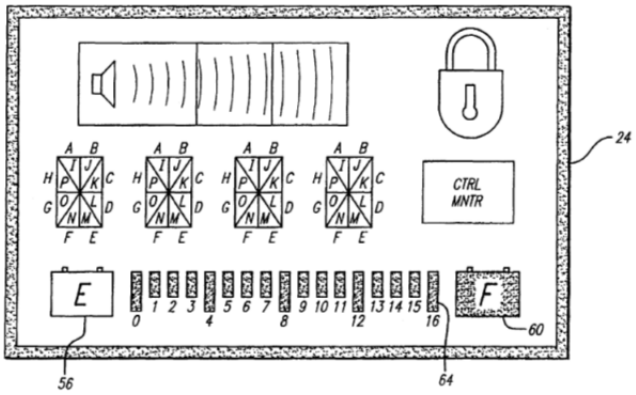
- "[T]he actual current leaving the battery can be directly measured by an electrical circuit well known to those skilled in the art. The battery current sensor 50 is such a circuit and provides a signal to the

	processor representative of the current drawn from the battery 26." (Ex. 1004, col. 7, ll. 21-26.)
[1e.] a circuit responsive to the monitoring circuit which determines the remaining time of charge in the battery;	Consistent with the comments in Section IV(A), above, the Board should construe "monitoring circuit" as the circuit described in **element 1d.** Layman discloses this limitation: • First, Layman identifies that this is a helpful feature to the user of the infusion pump: "[I]t is desirable to indicate to the pump operator the amount of time that the battery can run the pump before the battery becomes discharged." (Ex. 1004, col. 7, ll. 15-17.) • Second, in the district court lawsuit, Baxter has taken the position that "[t]he power supply processor [of the CareFusion infusion pump which developed from Layman] is a circuit responsive to the monitoring circuit which determines the remaining time of charge in the battery." (Ex. 1012 at APP0453.) Layman teaches that a "processor calculates the run time of the battery and displays the run time." (Ex. 1004, col. 2, ll. 64-65.) FIG. 2 of Layman shows the processor 42 and is annotated and reproduced below:

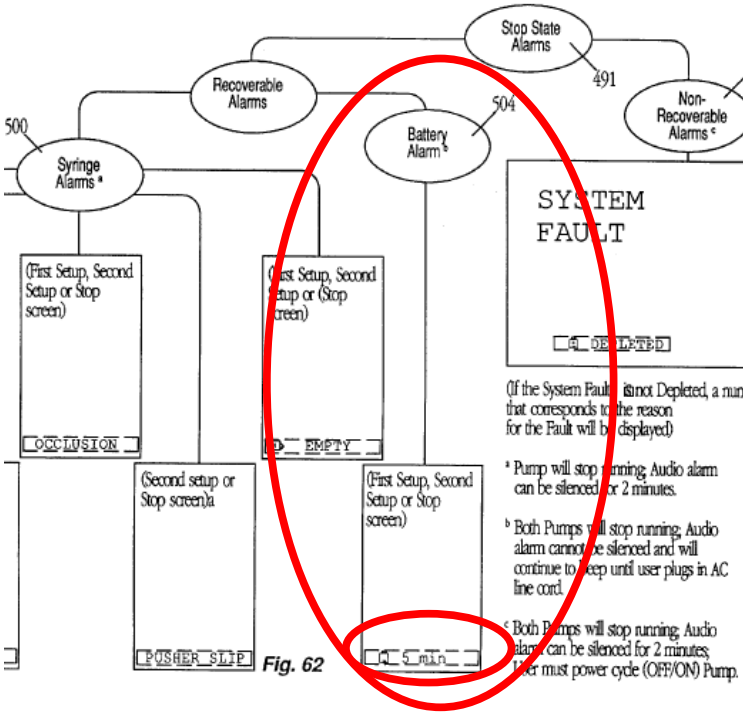


As can be seen, the processor 42 is shown as coupled to both the battery voltage sensor 49 and the battery current sensor 50 and as receiving signals from each. Layman further describes that the battery current sensor 50 "provides a signal to the processor representative of the current drawn from the battery 26. This level of current draw may then be used to determine the run time." (Ex. 1004, col. 7, ll. 24-27; *see also id.*, col. 2, ll. 4-5] ("[T]he run time of a battery directly depends on the current level being supplied by the battery").)

- Layman teaches a circuit that determines the remaining time of charge in the battery using current and further teaches other low-battery alerts from the voltage, as does the accused product. Accordingly, to the extent the claim reads on the accused product, it reads on Layman as well. In any event, it would have been obvious in light of Layman to determine the time of charge remaining from a combination of the two calculations.

[1f.] a battery alarm which occurs when the remaining time of charge in the battery is below a predetermined level;	Layman states as follows: • "Referring now to FIG. 3 in more detail, a display of run time, full, and empty icons is shown. The bar graph 64 presents run time in fifteen minute increments with zero time at the left and four hours (or sixteen quarter hours) at the right. Run time in excess of four hours is not shown on the bar graph other than that the graph does not decrease during use until there is actually less than four hours run time left. The F icon 60 indicates that the battery is fully charged regardless of the run time shown. The E icon 56 indicates that the battery is completely discharged and flashes when the processor is controlling the charger 52 to perform a deep discharge/recharge cycle on the battery." (Ex. 1004, col. 10, ll. 38-49) (emphasis added). FIG. 3  • Layman also describes that "[i]ndications are given to the user including audible and visual alarms." (Ex. 1004, col. 10, ll. 53-54.) In particular, it explains that in one embodiment "a low battery warning indication is provided" when the battery reaches 12.1V, "a battery depleted alarm is provided" when the battery reaches 11.45V, and "a backup alarm indication is activated" when the battery reaches 10.25V. (*Id.*, col. 10, ll. 54-59.) It would have been obvious to a person of ordinary skill

	in the art that any of the visual or audible indicators disclosed by Layman as triggered by battery voltage could alternatively be triggered based on the calculated run time remaining, and vice versa. (Ex. 1003 ¶ 18.) Furthermore, Gargano also discloses this limitation: • Gargano describes an infusion pump with a battery 58 housed within the pump for providing operating power to the entire system. (Ex. 1005, col. 7, ll. 6-13].) • In further detailing the pump, Gargano states: "The battery 58 applies DC current through a voltage regulator 78 for system power to a battery management circuit 80 which, for example, provides remaining battery life, and charge determinations that are provided to the CPU 64 over the bus 62. When on battery power, a battery icon is displayed with battery life in hours and minutes. (Ex. 1005, col. 7, ll. 32-38 (emphasis added); *see also id.*, col. 2, ll. 21-23; FIG. 5.) • In addition, Gargano explains that "a number of feedback warnings and alarms including battery status" are provided. (Ex. 1005, col. 2, ll. 17-19.) Specifically, Gargano describes a battery alarm 504 when five minutes of battery remain. (Ex. 1005, col. 20, ll. 9-15.) FIG. 62, annotated and reproduced below, illustrates the battery alarm 504 with the displayed battery icon accompanied by a "5 min" battery life indication.

	 *Fig. 62* • FIG. 62 includes a footnote "b" for the battery alarm 504 which states that "audio alarm cannot be silenced and will continue to beep until user plugs in AC line cord." Additional battery alarms/warnings disclosed in Gargano are discussed below in connection with claim element [1g.]. It would have been obvious to one of ordinary skill in the art to incorporate Gargano's battery alarms/warnings into other battery-powered infusion pumps, such as the infusion pump disclosed in Layman.
[1g.] a battery low alert which occurs when the remaining time of charge in the battery is below a predetermined level but above the battery alarm level; and	Layman discloses this limitation: • As noted above, Layman describes that "[i]ndications are given to the user including audible and visual alarms." (Ex. 1004, col. 10, ll. 53-54.) In particular, Layman describes multiple low battery warnings and alarms that are provided when the battery voltage reaches predetermined levels: "a low battery warning indication is provided" when the battery reaches 12.1V, "a battery depleted alarm is provided" when the battery reaches 11.45V, and "a backup alarm

indication is activated" when the battery reaches 10.25V. (*Id.*, col. 10, ll. 54-59.)

- Additionally, bar graph 64 in FIG. 3 illustrates 16 separate visual indicators, which illuminate sequentially to indicate the remaining time of charge in 15-minute increments. (Ex. 1004, col. 10, ll. 39-42.)

It would have been obvious to a person of ordinary skill in the art that any of the visual or audible indicators disclosed by Layman as triggered by battery voltage could alternatively be triggered based on the calculated run time remaining, and vice versa.

Furthermore, Gargano also discloses this limitation:

- Gargano teaches "first degree warnings" 646. FIG. 60, annotated and reproduced below, illustrates different types of first degree warnings 646.

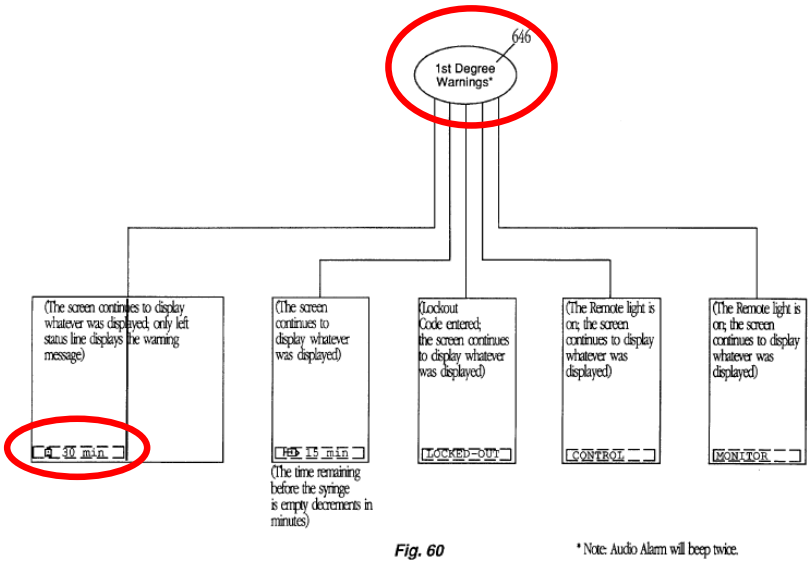
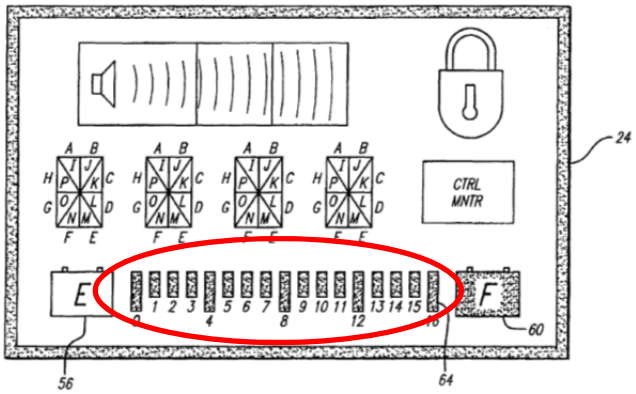


Fig. 60 * Note: Audio Alarm will beep twice.

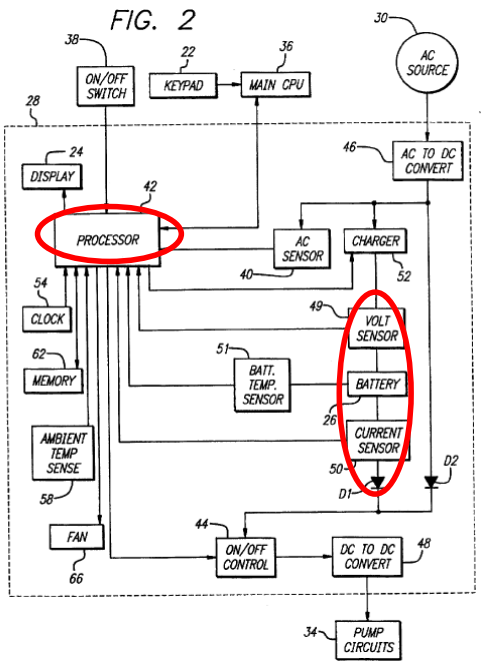
As shown in FIG. 60, one type of first degree warning 646 is a 30-minutes-of-battery-remaining warning. In particular, FIG. 60 shows a display having the battery icon accompanied by an indication of "30 min." FIG. 60 also includes an asterisk for the first degree warning 646 stating that "audio alarm will beep

	twice." • Gargano also teaches "second degree warnings" 648, including a battery icon accompanied by an indication of "15 min" and a "battery service warning" that indicates "LOW BATTERY." (Ex. 1005, col. 20, ll. 5-8; FIG. 61.) It would have been obvious to one of ordinary skill in the art to incorporate Gargano's battery alarms/warnings into other battery-powered infusion pumps, such as the infusion pump disclosed in Layman.
[1h.] display means for displaying the remaining time of charge in the battery.	As noted in Section IV(B), above, the Board should construe "display means" to be a means-plus-function limitation. Consistent with Baxter's position in the district court lawsuit, the Board should find that the function is displaying the remaining time of charge in the battery, and the structure disclosed in the '034 patent is an LCD. (*See* Ex. 1012 at APP0456.) Layman discloses a display means for displaying the remaining time of charge in the battery, including the described function and structure: • Layman describes that a "display includes the run time gauge indicating in time increments how much time remains in the battery." (Ex. 1004, col. 3, ll. 25-26; FIG. 3 (showing run time gauge 64).) Layman similarly states that a "liquid crystal display [LCD] 24 may be used to display the run time." (Ex. 1004, col. 8, ll. 14-15.) • "Referring now to FIG. 3 in more detail, a display of run time, full, and empty icons is shown. The bar graph 64 presents run time in fifteen minute increments with zero time at the left and four hours (or sixteen quarter hours) at the right. Run time in excess of four hours is not shown on the bar graph other than that the graph does not decrease during use until there is actually less than four hours run time left. The F icon 60 indicates that the battery is fully

	charged regardless of the run time shown. The E icon 56 indicates that the battery is completely discharged and flashes when the processor is controlling the charger 52 to perform a deep discharge/recharge cycle on the battery. (Ex. 1004, col. 10, ll. 38-49) (emphasis added). FIG. 3  Gargano also discloses this limitation: • Gargano provides that the infusion pump "has a display 24, typically a back lit LCD." (Ex. 1005, col. 4, ll. 20-21.) Gargano further explains that the display can be various types of LCD displays. (*See id.*, col. 7, ll. 54-67; FIG. 6.) • Gargano also teaches "continuous indication of remaining battery life on the display." (Ex. 1005, col. 2, ll. 22-23.) Specifically, FIGs. 60-62 of Gargano illustrate displays showing that the battery has "30 min," "15 min," and "5 min" of battery charge remaining.
2. The infusion pump of claim 1 wherein the monitoring circuit means further includes means for sampling the	As noted in Section IV(C), above, the Board should construe "means for sampling" to be a means-plus-function limitation. Consistent with Baxter's position in the district court lawsuit, the Board should find that the function is sampling the voltage and current of the battery, and the structure disclosed in the '034 patent is

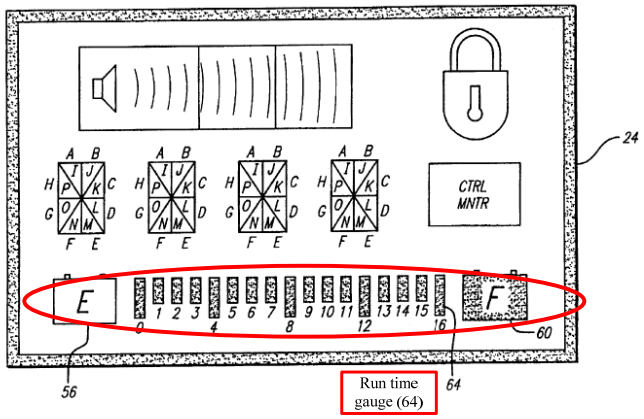
voltage and the current of the battery.	an analog-to-digital converter. (*See* Ex. 1012 at APP0460.) Layman discloses a circuit which includes means for sampling voltage and current, including the described function and structure: • As described above in connection with claim 1, Layman discloses a "battery voltage sensor 49 [that] continuously monitors the battery voltage and provides a representative signal to the processor 42." (Ex. 1004, col. 11, ll. 3-5.) Layman also discloses a "battery current sensor 50 … [that] provides a signal to the processor representative of the current drawn from the battery 26." (Ex. 1004, col. 7, ll. 21-26.) • Layman teaches that "a sample rate of five seconds" is appropriate for the processor 42 to monitor the signal from battery voltage sensor 49. (*See* Ex. 1004, col. 7, ll. 6-14.) A person of ordinary skill in the art would likewise have understood that Layman inherently discloses sampling the battery current, because battery current sensor 50 provides a signal to processor 42 (inherently a digital signal) that is representative of the (inherently analog) battery current. Converting analog signals to digital values inherently requires sampling the analog signals and an analog-to-digital converter. (*See, e.g.*, Ex 1008 at APP0398, 0402; *see also* Section III(D)). At a minimum, it would have been obvious to a person of ordinary skill to provide these analog values to the processor by sampling them.
3. The infusion pump of claim 1 wherein the monitoring means further includes means for alternatively sampling the voltage of the battery and the	As noted in Section IV(D), above, the Board should construe "means for alternatively sampling" to be a means-plus-function limitation. Consistent with Baxter's position in the district court lawsuit, the Board should find that the function is alternatively sampling the voltage of the battery and the current from the battery, and the structure disclosed in the '034 patent is a switch that selects among analog inputs such as voltage and

current from the battery.	current. (*See* Ex. 1012 at APP0465.) Layman discloses a circuit which includes means for alternatively sampling voltage and current, including the described function and structure: • As explained above in connection with claim 2, Layman expressly discloses sampling the battery voltage with battery voltage sensor 49, and inherently discloses sampling the current with battery current sensor 50, to provide digital signals to processor 42 for calculating the remaining battery run-time. Even if such sampling were not express or inherent, it would at least have been obvious as discussed above. • Likewise, because the same digital circuit cannot process two signals simultaneously, (Ex. 1003 ¶ 16), Layman inherently teaches that the processor alternates between sampling the voltage signal and the current signal. Baxter conceded in the district court lawsuit that this is inherent. (Ex. 1012 at APP0463-464 ("The LTC1325 chip ... contains a single ADC which *must* alternatively measure voltage and current." (emphasis added).) Nevertheless, even if it were not inherent, it would at most have been an obvious design choice for the processor 42 to alternate between sampling the various inputs being fed to it, as illustrated in FIG. 2 below.

	
4. The infusion pump of claim 1 further including a battery low alert which occurs when the battery charge is below a predetermined level.	As discussed in connection with **claim 1**, Layman describes that indications are given to the user that include audible and visual alarms. For example, bar graph 64 in FIG. 3 illustrates 16 separate visual indicators, which illuminate sequentially to indicate the remaining time of charge in 15-minute increments. Likewise, Layman describes multiple low battery warnings and alarms that are provided when the battery voltage reaches predetermined levels. As discussed, it would have been obvious to a person of ordinary skill in the art that any of the visual or audible indicators disclosed by Layman as triggered by battery voltage could alternatively be triggered based on the calculated run time remaining or charge remaining.
9[a]. A method of infusing a liquid into a patient comprising:	Layman teaches a method for infusing a liquid into a patient: • Layman describes FIG. 1 as showing "a medical infusion pump 10." (Ex. 1004, col. 3, ll. 60-61.) Layman further states, "The infusion pump includes a drive mechanism 18 that forces fluid from the

	reservoir to the patient." (Ex. 1004, col. 3, ll. 63-65.) Gargano also teaches such a method: • "The Setup state is used to enter all of the information necessary to run the pump, such as: syringe manufacturer and size; infusion units or type; mode or drug name; concentration; patient weight; infusion rate; bolus amount and duration; and dose amount, dose duration, number of doses and dose interval." (Ex. 1005, col. 11, ll. 40-45.) • "In order to provide a safeguard against the infusion of an incorrect material into a patient ..." (Ex. 1005, col. 6, ll. 15-16.) • "[T]hus avoiding excitation of purge functions while the pump 65 is connected to a patient." (Ex. 1005, col. 10, ll. 64-65.)
[9b.] infusing the liquid into the patient by use of an electrically powered mechanism;	As explained above in connection with **claim 1**, Layman and Gargano disclose a pump drive mechanism for applying the pumping action to a liquid for infusion in a patent. Furthermore, as also detailed above in connection with **claim 1**, Layman describes that a power management system 28 "controls the pump 10 to operate on ... external wall power or on battery power if external power is not available." (Ex. 1004, col. 4, ll. 3-9; *see also, e.g.*, col, 2, ll. 40-43.) Similarly, Gargano provides that the infusion pump and its parts may be powered by "AC voltage excitation from an electrical inverter 90 driven by 12 volts DC from the system power source through the voltage regulator 78." (Ex. 1005, col. 7, ll. 56-58.)
[9c.] powering the electronically powered mechanism with a battery;	Layman and Gargano disclose this element for at least the reasons cited in connection with **claim 1**, above.

[9d.] monitoring the voltage of the battery;	Layman discloses this element for at least the reasons cited in connection with **claim 1**, above.
[9e.] monitoring the current from the battery;	Layman discloses this element for at least the reasons cited in connection with **claim 1**, above.
[9f.] determining from the voltage and the current the remaining time of charge in the battery;	Layman discloses this element for at least the reasons cited in connection with **claim 1**, above. Gargano also discloses determining the remaining time of charge in the battery: • "The battery 58 applies DC current through a voltage regulator 78 for system power to a battery management circuit 80 which, for example, provides remaining battery life, and charge determinations that are provided to the CPU 64 over the bus 62." (Ex. 1005, col. 7, ll. 33-37.)
[9g.] alarming when the remaining time of charge in battery is below a predetermined level;	Layman and Gargano disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9h.] alerting when the remaining time of charge in battery is below a predetermined level but above the battery alarm level; and	Layman and Gargano disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9i.] displaying the remaining time of charge in the battery.	Layman and Gargano disclose this element for at least the reasons cited in connection with **claim 1**, above.
10. The method of claim 9 wherein the step of monitoring the voltage of the battery further includes	Layman discloses this element for at least the reasons cited in connection with **claim 2**, above.

sampling the voltage of the battery.	
11. The method of claim 10 wherein the step of monitoring the current of the battery further includes sampling the current of the battery.	Layman discloses this element for at least the reasons cited in connection with **claim 2**, above.
12. The method of claim 9 further including the step of calculating the remaining minutes of charge left in the battery.	As explained above in connection with **claim 1**, Layman discloses display means for displaying the remaining time of charge in the battery (display 24 having run time gauge 64 indicating how much time remains in the battery): • FIG. 3 of Layman illustrates a front panel display of the infusion pump and is annotated and reproduced below: FIG. 3  • Layman states that the run time gauge 64 "presents run time in fifteen minute increments with zero time at the left and four hours (or sixteen quarter hours) at the right." (Ex. 1004, col. 10, ll. 40-43.) • Layman also states that "the processor may display a run time of 5.2 hours." (Ex. 1004, col. 8, ll. 7; *see also* col. 8, l. 12 ("run time will be displayed as 3.71

	hrs").) In the district court lawsuit, Baxter has taken the position that "calculating the remaining hours of charge left in the battery ... is equivalent to calculating the remaining minutes of charge left in the battery under the doctrine of equivalents" because "[t]here is a known correspondence between hours and minutes." (Ex. 1012 at APP0484.) As such it would have been obvious for one having ordinary skill in the art to display the remaining time of charge left in minutes instead of hours with a decimal. Gargano also discloses this limitation: As explained above in connection with **claim 1**, Gargano teaches that the battery management circuit 80 provides remaining battery life and charge determinations to the CPU 64. In addition, Gargano teaches that when the pump is operating on battery power, a battery icon is displayed with battery life in hours and minutes. (Ex. 1005, col. 7, ll. 32-38; *see also id.*, col. 2, ll. 21-23; FIG. 5.) Specifically, Gargano illustrates the display of a battery icon accompanied by a numerical display of remaining battery life in minutes (e.g., FIG. 60 shows a display having the battery icon accompanied by an indication of "30 min"; FIG. 61 shows a display having the battery icon accompanied by an indication of "15 min"; FIG. 62 shows a display having the battery icon accompanies by an indication of "5 min").

B. Ground 2: Obviousness of Claims 1-4 and 9-12 Based on Layman, in view of Gargano, in further view of the LTC1325 datasheet

Claims 1-4 and 9-12 are obvious under 35 U.S.C. § 103(a) in view of Layman, Gargano, and the LTC1325 datasheet as set forth below.

i. Disclosure of Layman

The disclosure of Layman is discussed in Section VI(A)(i), above.

ii. Disclosure of Gargano

The disclosure of Gargano is discussed in Section VI(A)(ii), above.

iii. Disclosure of LTC1325 datasheet

In the district court lawsuit, Baxter relied on the datasheet of the commercially-available LTC1325 chip (hereinafter "LTC 1325 datasheet," attached as Ex. 1007), which is incorporated into the accused Alaris system, and took the position that numerous claim limitations for the claims challenged in this Petition were covered by the LTC1325 chip. (Ex. 1012 at APP0444, 447-453, 457-466, 470-474, 479-484.) The LTC1325 datasheet describes one embodiment of an integrated circuit that provides battery monitoring functionality for an electric device, such as an infusion pump. (Ex. 1007.) It provides that the LTC1325 chip is "an integrated battery management system" that "allows the total charge leaving the battery to be calculated." (*Id.* at APP0369.) The LTC1325 chip measures "the average voltage across [a] sense resistor ... to determine the average battery load current," and through an analog-to-digital converter in the LTC1325, a microprocessor "can then accumulate the ADC measurements and do a time average to determine the total charge leaving the battery." (*Id.* at APP0383.)

iv. Rationale for Combining the Teachings of Layman, Gargano, and the LTC1325 datasheet

As noted above, a person of ordinary skill in the art of infusion pump battery monitoring design in 1996 would have readily understood the motivation to combine the infusion pump system of Layman with the specific alarms and alert features of the Gargano infusion pump. Additionally, such a person of ordinary skill would have readily understood the motivation to combine the infusion pump of Layman and/or Gargano with the battery monitoring functionality and features disclosed in the LTC1325 datasheet.

First, it is well understood in the field of electrical engineering that methods for calculating the capacity of a battery by integrating current over time have existed since at least the late 19th century. (Ex. 1003 ¶ 9; *see also* Ex. 1016 at APP0793.) In light of this, a person of ordinary skill in the art would have known that other electrical devices and integrated products existed that included functionality directed to battery monitoring. Because design and development engineers frequently look to commercially-available products directed at the desired functionality, it would have been obvious for a person of ordinary skill in the art to look to the LTC1325 datasheet. (Ex. 1003 ¶ 13.)

Second, the commercially-available LTC1325 chip was specifically designed and manufactured as a "drop in" solution for battery monitoring functionality that could be combined with a circuit in a microprocessor-controlled

electronic device, such as an infusion pump. (*See* Ex. 1017 at APP0812-814.) The purpose of the LTC1325 chip is to be combined with electrical devices, such as an infusion pump. CareFusion's inclusion of the LTC1325 in the accused products is a further example of such a motivation to combine the LTC1325 chip with an infusion pump.

Thus, it would have been obvious to one of ordinary skill in the art at the time of Baxter's alleged invention in 1996 to combine the Layman and/or Gargano infusion pump with the battery monitoring functionality of the LTC1325 chip. Such a combination is merely a substitution of one known element for another to obtain predictable results. *See, e.g.*, M.P.E.P. § 2143. It also would have been "combining prior art elements according to known methods to yield predictable results." *See, e.g., id.*

v. Comparison of Claims 1-4 and 9-12 to Layman, Gargano, and the LTC1325 datasheet

The claim chart below specifies where each element of claims 1-4 and 9-12 is met by Layman, Gargano, and the LTC1325 datasheet.

'034 Claim Language	Citations to Layman, Gargano, and the LTC1325 datasheet
1[a]. An infusion pump comprising:	Layman and Gargano disclose **element 1a** for the reasons discussed in Section VI(A)(iv).
[1b.] a pump drive mechanism for applying the pumping	Layman and Gargano disclose **element 1b** for the reasons discussed in Section VI(A)(iv).

action to a liquid for infusion in a patent;	
[1c.] a battery for powering the pump drive mechanism;	Layman and Gargano disclose **element 1c** for the reasons discussed in Section VI(A)(iv).
[1d.] a circuit which monitors the voltage and current from the battery;	Layman discloses **element 1d** for the reasons discussed in Section VI(A)(iv). The LTC1325 datasheet discloses a circuit which monitors the voltage and current from the battery: In the district court lawsuit, Baxter has taken the position that this claim limitation is covered by the LTC1325 chip. (Ex. 1012 at APP0444, 0447-0453.) CareFusion denies that these features of the LTC1325 chip fall within Baxter's claims, but regardless, this claim limitation is at least rendered obvious by the LTC1325 datasheet. Indeed, under Baxter's view of the claim, the LTC1325 datasheet teaches a circuit which monitors the voltage and current from a battery. (*See* Ex. 1007 at APP0383) ("[T]he average voltage across the sense resistor can be measured to determine the average battery load current."). It would have been obvious to combine the monitoring functionality taught by the LTC1325 datasheet with the battery monitoring functionality in the Layman or Gargano infusion pumps.
[1e.] a circuit responsive to the monitoring circuit which determines the remaining time of charge in the battery;	Consistent with the comments in Section IV(A), above, the Board should construe "monitoring circuit" as the circuit described in **element 1d.** Layman discloses **element 1d** for the reasons discussed in Section VI(A)(iv).

	The LTC1325 datasheet teaches a responsive circuit which can make time determinations regarding the state of charge of the battery: In the district court lawsuit, Baxter asserted that the LTC1325 datasheet "indicates that calculating the time remaining" can be done by an accompanying microprocessor. (Ex. 1012 at APP0452.) For example, the LTC1325 datasheet provides that the LTC chip can measure the average voltage across the sense resistor and that a "microprocessor can then accumulate the ADC measurements and do a time average to determine the total charge leaving the battery." (*See* Ex. 1007 at APP0383.) It would have been obvious to combine the monitoring functionality taught by the LTC1325 datasheet with the battery monitoring functionality in the Layman or Gargano infusion pumps.
[1f.] a battery alarm which occurs when the remaining time of charge in the battery is below a predetermined level;	Layman and Gargano disclose **element 1f** for the reasons discussed in Section VI(A)(iv).
[1g.] a battery low alert which occurs when the remaining time of charge in the battery is below a predetermined level but above the battery alarm level; and	Layman and Gargano disclose **element 1g** for the reasons discussed in Section VI(A)(iv).
[1h.] display means for displaying the remaining time of	As noted in Section IV(B), above, the Board should construe "display means" to be a means-plus-function limitation. Consistent with Baxter's position in the

charge in the battery.	district court lawsuit, the Board should find that the function is displaying the remaining time of charge in the battery, and the structure disclosed in the '034 patent is an LCD. (*See* Ex. 1012 at APP0456.) Layman and Gargano disclose **element 1h** for the reasons discussed in Section VI(A)(iv).
2. The infusion pump of claim 1 wherein the monitoring circuit means further includes means for sampling the voltage and the current of the battery.	As noted in Section IV(C), above, the Board should construe "means for sampling" to be a means-plus-function limitation. Consistent with Baxter's position in the district court lawsuit, the Board should find that the function is sampling the voltage and current of the battery, and the structure disclosed in the '034 patent is an analog-to-digital converter. (*See* Ex. 1012 at APP0460.) Layman discloses **claim 2** for the reasons discussed in Section VI(A)(iv). The LTC1325 datasheet also discloses **claim 2**: In the district court lawsuit, Baxter expressly asserted that the LTC1325 datasheet disclosed this claim limitation. (Ex. 1012 at APP0458-0460 ("The analog to digital converter of the LTC1325 chip ... samples the current or voltage ...." CareFusion denies that these features of the LTC1325 chip fall within Baxter's claims, but regardless, this claim limitation is at least rendered obvious by the LTC1325 datasheet. Indeed, under Baxter's view of the claim, the LTC1325 datasheet and the analog-to-digital converter of the LTC1325 chip teach a circuit which includes means for sampling the voltage and current. (*See* Ex. 1007 at APP0375, 0377-0378) ("[T]he average voltage across the sense resistor can be measured to determine the average battery load current.").

	It would have been obvious to combine the monitoring functionality and means for sampling taught by the LTC1325 datasheet with the battery monitoring functionality in the Layman or Gargano infusion pumps..
3. The infusion pump of claim 1 wherein the monitoring means further includes means for alternatively sampling the voltage of the battery and the current from the battery.	As noted in Section IV(D), above, the Board should construe "means for alternatively sampling" to be a means-plus-function limitation. Consistent with Baxter's position in the district court lawsuit, the Board should find that the function is alternatively sampling the voltage of the battery and the current from the battery, and the structure disclosed in the '034 patent is a switch that selects among analog inputs such as voltage and current. (*See* Ex. 1012 at APP0465.) Layman discloses **claim 3** for the reasons discussed in Section VI(A)(iv). The LTC1325 datasheet also discloses **claim 3**: In the district court lawsuit, Baxter expressly asserted that the LTC1325 datasheet disclosed this claim limitation. (Ex. 1012 at APP0463-464 ("The LTC1325 chip ... contains a single ADC which must alternatively measure voltage and current.... a control circuit (the Circuit Logic) [] alternatively selects between current and voltage.") CareFusion denies that these features of the LTC1325 chip fall within Baxter's claims, but regardless, this claim limitation is at least rendered obvious by the LTC1325 datasheet. Indeed, under Baxter's view of the claim, the LTC1325 datasheet and the analog-to-digital converter of the LTC1325 chip teach a circuit which includes means for alternatively sampling the voltage and current. (*See* Ex. 1007 at APP0375, 0377-0378.) It would have been obvious to combine the monitoring functionality and means for alternatively sampling taught

	by the LTC1325 datasheet with the battery monitoring functionality in the Layman or Gargano infusion systems.
4. The infusion pump of claim 1 further including a battery low alert which occurs when the battery charge is below a predetermined level.	Layman discloses **claim 4** for the reasons discussed in Section VI(A)(iv).
9[a]. A method of infusing a liquid into a patient comprising:	Layman and Gargano disclose **element 9a** for the reasons discussed in Section VI(A)(iv).
[9b.] infusing the liquid into the patient by use of an electrically powered mechanism;	Layman and Gargano disclose **element 9b** for the reasons discussed in Section VI(A)(iv).
[9c.] powering the electronically powered mechanism with a battery;	Layman and Gargano disclose this element for at least the reasons discussed in Section VI(A)(iv).
[9d.] monitoring the voltage of the battery;	Layman and the LTC1325 datasheet disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9e.] monitoring the current from the battery;	Layman and the LTC1325 datasheet disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9f.] determining from the voltage and the current the remaining time of charge in the battery;	Layman discloses this element for at least the reasons discussed in Section VI(A)(iv).
[9g.] alarming when the remaining time of charge in battery is	Layman and Gargano disclose this element for at least the reasons discussed in Section VI(A)(iv).

below a predetermined level;	
[9h.] alerting when the remaining time of charge in battery is below a predetermined level but above the battery alarm level; and	Layman and Gargano disclose this element for at least the reasons discussed in Section VI(A)(iv).
[9i.] displaying the remaining time of charge in the battery.	Layman and Gargano disclose this element for at least the reasons discussed in Section VI(A)(iv).
10. The method of claim 9 wherein the step of monitoring the voltage of the battery further includes sampling the voltage of the battery.	Layman and the LTC1325 datasheet disclose this element for at least the reasons cited in connection with **claim 2**, above.
11. The method of claim 10 wherein the step of monitoring the current of the battery further includes sampling the current of the battery.	Layman and the LTC1325 datasheet disclose this element for at least the reasons cited in connection with **claim 2**, above.
12. The method of claim 9 further including the step of calculating the remaining minutes of charge left in the battery.	Layman and Gargano disclose **claim 12** for the reasons discussed in Section VI(A)(iv).

C. Ground 3: Obviousness of Claims 1-4 and 9-12 Based on Layman, in view of Gargano, in further view of the EDN Publication

Claims 1-4 and 9-12 are obvious under 35 U.S.C. § 103(a) in view of Layman, Gargano, and the EDN Publication as set forth below.

i. Disclosure of Layman

The disclosure of Layman is discussed in Section VI(A)(i), above.

ii. Disclosure of Gargano

The disclosure of Gargano is discussed in Section VI(A)(ii), above.

iii. Disclosure of the EDN Publication

The EDN publication (hereinafter "EDN Publication," attached as Ex. 1006) teaches that battery-energy gauges for various electronic devices were well known in the art at the time of the alleged invention. (Ex. 1006 at APP0364.) Such gauges would "monitor the amount of energy that flows into and out of a battery to make accurate estimates of the amount of charge remaining." (*Id.*) The estimate was "available not only to the user, via an on-pack display, but also to the battery-run device, via some sort of serial data link." (*Id.*)

The EDN Publication specifically identified the issue of unreliable and inaccurate results for battery monitoring through voltage measurements only, as was described in the '034 patent. (*Compare* Ex. 1001, col. 1, ll. 54-60 *with* Ex. 1006 at APP0364 ("[S]ome manufacturers have marketed crude energy gauges that

use this approach. The results are woefully unreliable....").) The EDN Publication then explains that "[t]he only accurate way to know how much charge is actually in a battery pack is to count the coulombs as they come and go" and that such "highly accurate gauges [were] available":

> A simplistic way of viewing a rechargeable battery is as a tank of electrons. As the charge depletes, the tank drains. As it recharges, the tank fills. To know how full the tank is, you need to count the electrons as they go into the empty tank. If the size of the tank is also known, you can make an estimate of "percent full."
>
> Electrical current is a measure of electron flow, where $1A = 1.6 \times 10^{19}$ electrons/sec. To count electrons, the energy gauge must monitor battery current and then numerically integrate it over time. This process requires three elements of hardware to implement: a current-sensing device, an A/D converter, and a processor to perform the integration and send the results to the host.
>
> ...
>
> By far, the least expensive and most common approach for current sensing is to insert a low-value resistor in series with the current path and measure the voltage drop across it....
>
> An A/D converter measures the voltage across the current-sensing resistor.... After conversion to digital form, it is relatively easy to numerically integrate the readings with a [microprocessor].

(*Id.* at APP0365.) The gauge can then display the information on an LCD or provide it to the device through a serial link, which could be used for

"instantaneous readings [or] multiple levels of low-battery warning." (*Id.* at APP0367.)

iv. Rationale for Combining the Teachings of Layman, Gargano, and the EDN Publication

As noted above, a person of ordinary skill in the art of infusion pump battery monitoring design in 1996 would have readily understood the motivation to combine the infusion pump system of Layman with the specific alarms and alert features of the Gargano infusion pump. Additionally, such a person of ordinary skill would have readily understood the motivation to combine the infusion pump of Layman or Gargano with the battery monitoring functionality and features disclosed in the EDN Publication.

As noted above, it is well understood in the field of electrical engineering that methods for calculating the capacity of a battery by integrating current over time have existed since at least the late 19th century. (Ex. 1003 ¶ 9; *see also* Ex. 1016 at APP0793.) The EDN Publication explains the unreliability of voltage measurements for measuring remaining battery life in NiCd rechargeable batteries, which were common for infusion pumps. (Ex. 1006 at APP0364.) For such batteries, it was known in the art that "highly accurate gauges" depended on counting the coulombs by monitoring battery current and then numerically integrating the current over time. (*Id.* at APP0365.)

Because design and development engineers working on battery systems frequently look to publications and commercially-available products directed at other battery-powered products with the desired functionality, it would have been obvious for a person of ordinary skill in the art to look to the EDN publication. (Ex. 1003 ¶ 13.) Furthermore, because rechargeable batteries are not unique to infusion pumps, it would have been obvious for any person of ordinary skill in the art to combine teachings for monitoring battery life in other electronic devices, as taught by publications, to monitoring battery life in an infusion pump. (Ex. 1003 ¶ 15.) Indeed, during the prosecution of the '034 patent, the examiner rejected Baxter's argument that prior art related to battery monitoring outside the context of an infusion pump was not relevant: "The fact that the battery of Codd is used to power a motor of a car is irrelevant in light of the fact that the claims do not recite a limitation which would indicate that the charging of the battery is load specific." (Ex. 1002 at APP0152.)

Thus, it would have been obvious to one of ordinary skill in the art at the time of Baxter's alleged invention in 1996 to combine the Layman and/or Gargano infusion pump with the battery monitoring functionality disclosed in the EDN Publication. Such a combination is merely a substitution of one known element for another to obtain predictable results. *See, e.g.*, M.P.E.P. § 2143. It also would

have been "combining prior art elements according to known methods to yield predictable results." *See, e.g., id.*

Thus, it would have been obvious to one of ordinary skill in the art at the time of Baxter's alleged invention in 1996 to combine the Layman infusion system with the alarm and alert triggers of the infusion pump disclosed in Gargano. Such modification of the Layman system with the alarm and alert triggers disclosed by Gargano is merely a substitution of one known element for another to obtain predictable results. *See, e.g.*, M.P.E.P. § 2143. It also would have been "combining prior art elements according to known methods to yield predictable results." *See, e.g., id.*

v. Comparison of Claims 1-4 and 9-12 to Layman, Gargano, and the EDN Publication

The claim chart below specifies where each element of claims 1-4 and 9-12 is met by the Layman, Gargano, and the EDN Publication combination.

'034 Claim Language	Citations to Layman, Gargano, the LTC1325 datasheet, and the EDN Publication
1[a]. An infusion pump comprising:	Layman and Gargano disclose **element 1a** for the reasons discussed in Section VI(A)(iv).
[1b.] a pump drive mechanism for applying the pumping action to a liquid for infusion in a patent;	Layman and Gargano disclose **element 1b** for the reasons discussed in Section VI(A)(iv).
[1c.] a battery for powering the pump	Layman and Gargano disclose **element 1c** for the reasons discussed in Section VI(A)(iv).

drive mechanism;	
[1d.] a circuit which monitors the voltage and current from the battery;	Layman discloses **element 1d** for the reasons discussed in Section VI(A)(iv). The EDN Publication also discloses a circuit which monitors the voltage and current from the battery: The EDN Publication explains that monitoring of voltage and current can be through "fully assembled modules" of circuits or "single ICs that require additional circuitry." (Ex. 1006 at APP0367.) Such circuits were known to be able to monitor "terminal voltage, either open circuit or under load," and "monitor battery current." (*Id.* at APP0364.) Specifically, "[a]n A/D converter [could] measure[] the voltage across the current-sensing resistor." (*Id.*) The EDN Publication also notes that battery information "may include instantaneous readings of voltage [and] current." (*Id.* at APP0367.) It would have been obvious to combine the monitoring functionality taught by the EDN Publication with the battery monitoring functionality in the Layman or Gargano infusion pumps.
[1e.] a circuit responsive to the monitoring circuit which determines the remaining time of charge in the battery;	Consistent with the comments in Section IV(A), above, the Board should construe "monitoring circuit" as the circuit described in **element 1d.** Layman discloses **element 1e** for the reasons discussed in Section VI(A)(iv). The EDN Publication discloses a circuit that determines remaining battery charge left: • The EDN Publication provides that the circuit noted above ("energy gauge") can "tell you exactly how much [battery] charge remains available for use."

	(Ex. 1006 at APP0364.) • Specifically, it explains that terminal voltage can be monitored and "translate[d] ... into a measure of remaining charge." (*Id.*) • Similarly, it explains that the battery-energy gauge can "monitor battery current and then numerically integrate it over time" to "count electrons" to determine the amount of charge in the battery (i.e., "know how full the tank is"). It further discloses a particular way to do so: "By far, the least expensive and most common approach for current sensing is to insert a low-value resistor in series with the current path and measure the voltage drop across it.... An A/D converter measures the voltage across the current-sensing resistor.... After conversion to digital form, it is relatively easy to numerically integrate the readings with a [microprocessor]." (*Id.* at APP0365.) To the extent the EDN Publication does not expressly or inherently disclose determining the remaining time of charge, it would have been obvious to a person of ordinary skill in the art. (*See* Ex. 1003 ¶ 17.) It would have been obvious to combine any of the monitoring functionality taught by the EDN Publication with the battery monitoring functionality in the Layman or Gargano infusion pumps.
[1f.] a battery alarm which occurs when the remaining time of charge in the battery is below a predetermined level;	Layman and Gargano disclose **element 1f** for the reasons discussed in Section VI(A)(iv). The EDN Publication also discloses providing indications regarding "multiple levels of low-battery warning." (Ex. 1006 at APP0367.)

	It would have been obvious to one of ordinary skill in the art to incorporate the "multiple levels of low-battery warning" of the EDN Publication into the Layman or Gargano infusion pumps.
[1g.] a battery low alert which occurs when the remaining time of charge in the battery is below a predetermined level but above the battery alarm level; and	Layman and Gargano disclose **element 1g** for the reasons discussed in Section VI(A)(iv). The EDN Publication also discloses providing indications regarding "multiple levels of low-battery warning." (Ex. 1006 at APP0367.) It would have been obvious to one of ordinary skill in the art to incorporate the "multiple levels of low-battery warning" of the EDN Publication into the Layman or Gargano infusion pumps.
[1h.] display means for displaying the remaining time of charge in the battery.	As noted in Section IV(B), above, the Board should construe "display means" to be a means-plus-function limitation. Consistent with Baxter's position in the district court lawsuit, the Board should find that the function is displaying the remaining time of charge in the battery, and the structure disclosed in the '034 patent is an LCD. (*See* Ex. 1012 at APP0456.) Layman and Gargano disclose **element 1h** for the reasons discussed in Section VI(A)(iv). The EDN Publication also teaches display means for displaying battery life information to the user: The EDN Publication explains that the disclosed battery-energy gauge "are available [] to the user, via an on-pack display" and that "[t]he percentage of full [battery] charge[] is often directly available on an LED or LCD." (Ex. 1006 at APP0364, 0367.) As such, the battery-

	energy gauge allows a user to "know exactly how much charge is available from a battery pack." (*Id.* at APP0367.)
2. The infusion pump of claim 1 wherein the monitoring circuit means further includes means for sampling the voltage and the current of the battery.	As noted in Section IV(C), above, the Board should construe "means for sampling" to be a means-plus-function limitation. Consistent with Baxter's position in the district court lawsuit, the Board should find that the function is sampling the voltage and current of the battery, and the structure disclosed in the '034 patent is an analog-to-digital converter. (*See* Ex. 1012 at APP0460.) Layman discloses **claim 2** for the reasons discussed in Section VI(A)(iv).
3. The infusion pump of claim 1 wherein the monitoring means further includes means for alternatively sampling the voltage of the battery and the current from the battery.	As noted in Section IV(D), above, the Board should construe "means for alternatively sampling" to be a means-plus-function limitation. Consistent with Baxter's position in the district court lawsuit, the Board should find that the function is alternatively sampling the voltage of the battery and the current from the battery, and the structure disclosed in the '034 patent is a switch that selects among analog inputs such as voltage and current. (*See* Ex. 1012 at APP0465.) Layman discloses **claim 3** for the reasons discussed in Section VI(A)(iv).
4. The infusion pump of claim 1 further including a battery low alert which occurs when the battery charge is below a predetermined level.	Layman discloses **claim 4** for the reasons discussed in Section VI(A)(iv).

9[a]. A method of infusing a liquid into a patient comprising:	Layman and Gargano disclose **element 9a** for the reasons discussed in Section VI(A)(iv).
[9b.] infusing the liquid into the patient by use of an electrically powered mechanism;	Layman and Gargano disclose **element 9b** for the reasons discussed in Section VI(A)(iv).
[9c.] powering the electronically powered mechanism with a battery;	Layman and Gargano disclose this element for at least the reasons discussed in Section VI(A)(iv).
[9d.] monitoring the voltage of the battery;	Layman and the EDN Publication disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9e.] monitoring the current from the battery;	Layman and the EDN Publication disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9f.] determining from the voltage and the current the remaining time of charge in the battery;	Layman, Gargano, and the EDN Publication disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9g.] alarming when the remaining time of charge in battery is below a predetermined level;	Layman, Gargano, and the EDN Publication disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9h.] alerting when the remaining time of charge in battery is below a predetermined level but above the battery alarm level; and	Layman, Gargano, and the EDN Publication disclose this element for at least the reasons cited in connection with **claim 1**, above.
[9i.] displaying the	Layman, Gargano, and the EDN Publication disclose this element for at least the reasons cited in connection with

remaining time of charge in the battery.	**claim 1**, above.
10. The method of claim 9 wherein the step of monitoring the voltage of the battery further includes sampling the voltage of the battery.	Layman discloses this element for at least the reasons discussed in Section VI(A)(iv).
11. The method of claim 10 wherein the step of monitoring the current of the battery further includes sampling the current of the battery.	Layman discloses this element for at least the reasons discussed in Section VI(A)(iv).
12. The method of claim 9 further including the step of calculating the remaining minutes of charge left in the battery.	Layman and Gargano disclose **claim 12** for the reasons discussed in Section VI(A)(iv).

VII. CONCLUSION

Because the information presented in this petition shows that there is a reasonable likelihood that the Petitioner CareFusion will prevail with respect to at least one of the claims challenged in the petition, CareFusion respectfully requests that a Trial be instituted and that claims 1-4 and 9-12 be canceled as unpatentable.

Respectfully submitted,

Dated: July 19, 2016

/ Kurt J. Niederluecke /
Kurt J. Niederluecke
Registration No. 40,102
Fredrikson & Byron, P.A.
200 South Sixth Street, Suite 4000
Minneapolis, MN 55402-1425

PETITION FOR INTER PARTES REVIEW

OF U.S. PATENT NO. 5,764,034

Attachment A:

Proof of Service of the Petition

CERTIFICATE OF SERVICE

I hereby certify that on this 19th day of July, 2016, I caused a copy of this Petition, including all attachments, appendices and exhibits 1001-1018, to be served in their entirety by electronic mail and Federal Express on the following counsel of record for patent owner:

Email and Federal Express
John T. Gutkoski
Joseph L. Stanganelli
BARCLAY DAMON LLP
One International Place, 14th Floor
Boston, Massachusetts 02110

Federal Express
Francis C Kowalik
Corporate Counsel, Law Department
Baxter International, Inc.
One Baxter Parkway DF2-2E
Deerfield, IL 60015

By: / Kurt J. Niederluecke /
Kurt J. Niederluecke

Dated: July 19, 2016

PETITION FOR INTER PARTES REVIEW

OF U.S. PATENT NO. 5,764,034

Attachment B:

List of Evidence and Exhibits Relied Upon in Petition

Exhibit #	Reference Name	Exhibit Page #
1001	U.S. Patent No. 5,764,034	APP0001-029
1002	File History of U.S. Patent No. 5,764,034	APP0030-232
1003	Declaration of Yangming Xu dated July 14, 2016	APP0233-240
1004	U.S. Patent No. 5,712,795 to Layman et al.	APP0241-276
1005	U.S. Patent No. 5,814,015 to Gargano et al.	APP0277-360
1006	Malcolm McClure, *Energy gauges add intelligence to rechargeable batteries*, EDN, May 26, 1994, at 125	APP0361-367
1007	Linear Technology Corporation, *LTC1325 Microprocessor-Controlled Battery Management System* (Copyright 1994)	APP0368-392
1008	Dieter Seitzer et al., Electronic Analog-to-Digital Converters, (John Wiley & Sons Ltd., c1983)	APP0393-406
1009	Baxter's original Complaint in Case No. 1:15-cv-9986 in the U.S. District Court for the Northern District of Illinois	APP0407-416
1010	The Court's Order Setting Patent Case Schedule from Case No. 1:15-cv-9986 in the U.S. District Court for the Northern District of Illinois (Doc. No. 48), dated May 24, 2016	APP0417-420
1011	The Local Patent Rules of the U.S. District Court for the Northern District of Illinois	APP0421-434
1012	Excerpts from Baxter's Initial Infringement Contentions in Case No. 1:15-cv-9986 in the U.S. District Court for the Northern District of Illinois, dated June 24, 2016	APP0435-484
1013	Advanced Medical, Inc., Form 10-K for the Year Ended December 31, 1996	APP0485-604
1014	Alaris Medical Inc., Form 10-K for the Year Ended December 31, 1997	APP0605-724
1015	Alaris Medical Inc., Form 10-K for the Year Ended December 31, 2001	APP0725-785

Exhibit #	Reference Name	Exhibit Page #
1016	George Wood Vinal, Storage Batteries: A General Treatise on the Physics and Chemistry of Secondary Batteries and Their Engineering Applications, (John Wiley & Sons Ltd., c1940)	APP0786-794
1017	Anthony Ng et al., *LTC1325 Battery Management System Offers Unparalleled Flexibility*, Linear Technology Magazine, Oct. 1994, at 17	APP0795-827
1018	Anne Swager, *Smart-Battery Technology: Power Management's Missing Link*, EDN, March 2, 1995, at 47	APP0828-849

PETITION FOR INTER PARTES REVIEW

OF U.S. PATENT NO. 5,782,805

Attachment C:

Word Count Compliance Certificate

WORD COUNT COMPLIANCE CERTIFICATE

I certify that this brief conforms to the requirements of 37 CFR § 42.24(a)(1)(i) for a brief produced with a proportional font. The length of this brief, counted in compliance with § 42.24(a)(1) and relying on the word count of the word-processing system, is 13,150 words. This brief was prepared using Microsoft Word 2010 and the word processing program has been applied specifically to include all text, including headings, footnotes, and quotations for word count purposes.

By: / Kurt J. Niederluecke /
Kurt J. Niederluecke

Dated: July 19, 2016

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