

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

VALTRUS INNOVATIONS LTD., and
KEY PATENT INNOVATIONS LTD.,

Plaintiffs,

v.

EQUINIX, INC.,

Defendant.

C.A. No. 2:25-cv-00016-JRG

JURY TRIAL DEMANDED

**DEFENDANT'S INVALIDITY AND INELIGIBILITY CONTENTIONS AND
DISCLOSURES PURSUANT TO PATENT RULE 3-3**

EXHIBITS

Exhibit	Invalidity Claim Charts
A-1 – A-10	Invalidity claim charts for U.S. Patent No. 6,854,284
B-1 – B-19	Invalidity claim charts for U.S. Patent No. 6,868,683
C-1 – C-34	Invalidity claim charts for U.S. Patent No. 6,868,682
D-1 – D-7	Invalidity claim charts for U.S. Patent No. 7,939,967

INTRODUCTION

Defendant Equinix, Inc. (“Equinix” or “Defendant”) hereby submits its Invalidity Contentions concerning the patent claims asserted by Plaintiffs Valtrus Innovations Limited and Key Patent Innovations Limited (“Plaintiffs”). The citation of prior art herein and the accompanying exhibits are being disclosed as, and should be construed as nothing more than, Defendant’s Invalidity Contentions, and may, in part, be based on Plaintiffs’ apparent view as to the scope of the Asserted Claims as reflected in its Infringement Contentions. Defendant in no way accepts Plaintiffs’ apparent reading of the Asserted Claims as reflecting the proper scope of the Asserted Claims.

Defendant’s Invalidity Contentions are based on its current knowledge, understanding of the prior art and information reasonably available. Thus, Defendant expressly reserves the right to amend, or supplement these Invalidity Contentions based on further investigation, discovery, evaluation of the scope and content of the prior art, admissions, the Court’s claim construction, any other reasonable basis, and as permitted by the Court, Local Rules and the Federal Rules of Civil Procedure.

Further, the Court has not yet construed the Asserted Claims. Plaintiffs’ subsequent assertions, and the Court’s construction may alter the materiality and relevance of some references and moot the Invalidity Contentions while simultaneously giving rise to new issues regarding invalidity of the Asserted Patents.

Various positions set forth in these Invalidity Contentions are predicated on Plaintiffs’ overly broad, ambiguous, and/or vague interpretations of the claims as evidenced by the infringement allegations received to date. They shall not be treated as an admission that Defendant agrees with Plaintiffs’ claim constructions of any claim term, or that Plaintiffs’ contentions on the

meaning of the Asserted Claims are correct. Defendant will assert any proposed claim constructions pursuant to the Federal Rules, Local Rules, standing orders, the Court's procedures, and the Docket Control Order (Dkt. 21) issued in this case.

Much of the prior art identified in the attached exhibits reflect common knowledge, the knowledge of a person of skill in the art, and the state of the art before the filing date of the Asserted Patents. In many instances where a particular contention calls for combining references, any one of a number of references may be combined. The inclusion of certain exemplary combinations of prior art references does not exclude other combinations based upon the claim charts attached hereto.

I. ASSERTED PATENTS

Plaintiffs' Infringement Contentions assert the following patents and patent claims (collectively, the "Asserted Patents" and "Asserted Claims"):

Asserted Patent	Asserted Claims
6,854,284 (the "'284 patent")	10-13, 15-17
6,868,683 (the "'683 patent")	10-15
6,868,682 (the "'682 patent")	1-4, 7-10
7,939,967 (the "'967 patent")	1-11

II. RESERVATION OF RIGHTS

Defendant's Invalidity Contentions are based on its current knowledge of the Asserted Patents, the prior art, Plaintiffs' Infringement Contentions, and upon information presently and reasonably available to Defendant. This litigation is in the early stages, and Defendant's investigation of the prior art is ongoing. Consistent with the local Patent Rules (including P.R. 3-6) and the Federal Rules of Civil Procedure, Defendant reserves the right to supplement, amend,

modify, revise, or correct any aspect of its Invalidity Contentions and to provide additional information as such information becomes available through discovery or otherwise.

No aspect of Defendant's Invalidity Contentions shall be deemed to be an admission that its contentions are complete. In particular, Defendant reserves the right to supplement its Invalidity Contentions as discovery continues and after any further claim construction by the Court. In addition, Defendant also reserves the right to supplement its Invalidity Contentions should Plaintiffs subsequently attempt to amend their P.R. 3-1 or 3-2 disclosures in any way, or to otherwise modify their infringement allegations against Defendant or seek to establish an earlier date of invention (while reserving all rights to challenge any attempt by Plaintiffs to do so).

Defendant further reserves the right to supplement its Invalidity Contentions with information subsequently provided by Plaintiffs concerning their infringement contentions. Plaintiffs' Infringement Contentions fail to identify specifically for many of the Asserted Claim limitations the allegedly infringing structures and acts in the accused products and methods, in contravention of P.R. 3-1. Plaintiffs' failure to identify specifically infringing structures and acts prevents Defendant from searching for, locating, presenting, and relying on prior art having all or some of such structures and acts, thus effectively denying Defendant the opportunity to rely on the fundamental principle that whatever infringes a claim if later in time anticipates the claim if earlier in time, and further denying Defendant the opportunity to conduct other invalidity analytical methods.

Moreover, Defendant reserves the right to revise its ultimate contentions concerning the invalidity of the Asserted Claims of the Asserted Patents based upon the Court's construction of the Asserted Claims of the Asserted Patents, any findings as to the priority dates of the Asserted Claims, and/or positions that Plaintiffs, Defendant, or any expert witness may take concerning

claim interpretation, infringement, and/or invalidity issues. Prior art not included in this disclosure, whether known or not currently known to Defendant, may become relevant.

In particular, Defendant is currently unaware of the extent, if any, to which Plaintiffs will contend that limitations of the Asserted Claims are not disclosed in the prior art identified by Defendant. To the extent Plaintiffs contend limitations of the Asserted Claims are not disclosed in the prior art identified by Defendant, Defendant reserves the right to identify other references that would have made the addition of the allegedly missing limitation to the disclosed device or method obvious or show that the allegedly missing limitation would have been known or readily apparent to one of ordinary skill in the art at the time of the alleged invention in light of the disclosure of the prior art at issue. Defendant reserves the right to rely on any reference found in the prosecution histories of the applications leading to the Asserted Patents or otherwise identified in connection with this litigation.

Further, Defendant reserves the right to rely on any reference or item sought or to be sought from third parties that is solely within those third parties' possession, custody, or control, and has not yet been produced during discovery. Defendant may issue subpoenas to third parties believed to have knowledge, documentation and/or corroborating evidence concerning some of the prior art listed herein and/or additional prior art. These third parties include, but are not limited to, the authors, employers of authors, inventors, assignees, or former or current employee of assignees, of the references identified or the Asserted Patents, and of other parties accused of infringing the Asserted Patents in this or related litigation matters.

Defendant reserves the right to supplement these Invalidity Contentions in light of any newly discovered information produced by these or other companies from which Defendant may seek discovery. Much of the art identified in the attached exhibits reflects common knowledge, the

knowledge of a person of skill in the art, and the state of the art before the filing date of the Asserted Patents. In many instances where a particular contention calls for combining references, any one of a number of references can be combined. The inclusion of certain exemplary combinations of prior art references does not exclude other combinations based upon the claim charts attached hereto. Each of the Asserted Claims of the Asserted Patents is anticipated by and/or obvious in view of one or more of the items of prior art identified herein alone or in combination with other prior art references.

Defendant's claim charts cite or refer to particular teachings and disclosures of the prior art as applied to features of the Asserted Claims, but persons having ordinary skill in the art generally may view an item of prior art in the context of other publications, literature, products, and understanding. As such, the cited portions are examples only, and Defendant reserves the right to rely on uncited portions of the prior-art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation.

Defendant further reserves the right to rely on uncited portions of the prior-art references, other publications, and testimony to establish reasons for combining certain cited references that render the Asserted Claims obvious. The references discussed in the claim charts may disclose the elements of the Asserted Claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in the relevant time frame. Defendant intends to rely on admissions concerning the scope of the prior art relevant to the Asserted Patents found in, inter alia: the Asserted Patents and related patents and/or patent applications; the patent prosecution histories for the Asserted Patents and related patents and/or patent applications (including all prior art cited therein); any deposition testimony of the named inventors of the Asserted Patents and related

patents and/or patent applications in this matter or any other matter; evidence and testimony relating to the level of ordinary skill in the art; evidence from ongoing discovery, other litigation, administrative proceedings, and correspondence involving the Asserted Patents and related patents; and the papers filed and any evidence submitted by Plaintiffs in connection with this matter or the related matters involving the Asserted Patents.

To the extent these Invalidity Contentions rely on or otherwise embody particular constructions of terms or phrases in the Asserted Claims, Defendant is not proposing or adopting any such constructions as proper constructions of those terms or phrases at this time. The Court has established separate deadlines for the parties' proposed claim constructions in a Docket Control Order (Dkt. 21), and Defendant will disclose its proposed constructions according to those deadlines. For purposes of these Invalidity Contentions, Defendant may adopt alternative claim construction positions and broadly interpret each term or phrase. Portions of these contentions may be based potential interpretations and claim constructions that appear to underlie Plaintiffs' Infringement Contentions or claim construction positions. Defendant, however, does not concede that Plaintiffs' apparent constructions are proper, and expressly reserves the right to contest any such constructions. In addition, to the extent that these Invalidity Contentions suggest or imply a particular order in which the steps of method claims are performed, Defendant does not necessarily propose that the method claims must be limited to such order, although Defendant reserves the right to propose such an order.

Moreover, Defendant does not admit that any accused product, method, or service infringes any of the Asserted Claims. Nothing stated herein shall be treated as an admission, acknowledgement, acquiescence, or suggestion regarding the scope of any of the Asserted Claims or that any accused technology meets any limitations of the claims. Nothing stated herein shall be

construed as an admission or a waiver of any particular construction of any claim term. Moreover, use of terms herein from the Asserted Patents should not be understood to mean that such terms as used in the Asserted Patents, or claims, thereof are definite, enabled, or supported by adequate written description in accordance with 35 U.S.C. §§ 112(1), (2), (6).

Likewise, use of terms herein from the Asserted Patents should not be understood to suggest or imply a common, usual, ordinary, customary, plain, or accepted meaning in the art for any such term. Defendant's Invalidity Contentions are made in a variety of alternatives and do not represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein. Given that the Court has not yet made any claim construction ruling in this action, Defendant's Invalidity Contentions are made in a variety of alternatives and are not intended to necessarily be consistent with each other and/or Defendant's other contentions in this action, and should not be otherwise construed. Defendant's contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular claim element is met in any particular way. Defendant objects to any attempt to imply claim constructions from any identification of potential prior art.

Additionally, Defendant's Invalidity Contentions may use Plaintiffs' improper assertions of infringement and improper applications of the claims to understand Plaintiffs' view of the scope of the Asserted Claims. Defendant does not agree with Plaintiffs' application of the claims and deny infringement. Further, to the extent an accused product or feature comprises or arises from prior art, Defendant contends, without admitting purported infringement, that the Asserted Patents are anticipated and/or made obvious in view of that prior art and Plaintiffs' own Infringement Contentions.

In those instances where Defendant asserts that the claims are invalid under 35 U.S.C. § 112 (e.g., no written description, not enabled, and/or indefinite), Defendant has applied the prior art in part in accordance with Defendant's assumptions that Plaintiffs: (1) contend those claims are definite, (2) find written description support for those claims, and (3) contend that those claims are enabled. However, Defendant's prior art invalidity contentions do not necessarily represent Defendant's agreement or view as to the meaning, definiteness, written description support for, or enablement of any claim contained therein. In fact, Defendant notes numerous grounds for invalidity on such bases below.

Pursuant to P.R. 3-3(c), Defendant has, in the attached appendices, identified examples of where the subject matter recited in the preambles of the Asserted Claims may be found in various prior art references, without regard to whether the preambles are properly considered to be limitations of the Asserted Claims. Defendant reserves the right to argue that any of the preambles are or are not limiting during the claim construction proceedings in this case.

Defendant's Invalidity Contentions are based at least in part on the claimed priority dates that appear on the faces of the Asserted Patents and may also address any claims by Plaintiffs to have sworn behind such dates. Defendant reserves the right to challenge Plaintiffs' claimed priority dates for the Asserted Patents, based on the face of the Asserted Patents or sworn behind or otherwise, as discovery continues and after any further claim construction by the Court, including based on Plaintiffs' proposed (or implicit) claim construction positions or other facts learned during discovery.

Discovery is ongoing, and Defendant reserves the right to assert invalidity under 35 U.S.C. §§ 101, 102(a)-(g), and 112 to the extent that discovery or further investigation yield additional information forming the basis for such claims. Defendant reserves the right to assert that any

Asserted Patent is invalid under 35 U.S.C. §§ 102(f) and 116, in the event Defendant obtains evidence that one or more of the named inventors should not have been named as an inventor, or that one or more persons who should have been named as an inventor was not named. In either event, Defendant will supplement its Invalidity Contentions to address the misjoinder and/or non-joinder of inventors by, inter alia, identifying the persons who should or should not have been named inventors and describing the relevant facts and circumstances. Pursuant to P.R. 3-3 and 3-4, Defendant has provided disclosures and related documents pertaining only to the Asserted Claims as identified by Plaintiffs in their Infringement Contentions. Defendant reserves the right to modify, amend, or supplement these Invalidity Contentions to show the invalidity of any additional claims that the Court may allow Plaintiffs to later assert. Defendant further reserves the right to supplement its P.R. 3-4 document production should it later find additional, responsive documents.

Defendant incorporate(s) by reference all other bases for invalidity that may be identified in other filings, including in any interrogatory responses or in submissions before the United States Patent and Trademark Office (e.g., during *Inter Partes* Review proceedings) concerning the Asserted Patents and all related patents and/or parent applications, including but not limited to statements made by Defendant, the Patent Owner, APJs, authors, employers of authors, inventors, assignees, or former or current employee of assignees, and references cited therein.

Defendant further incorporates by reference any and all invalidity contentions previously served or subsequently served in the related matters, including those served by other parties Plaintiffs have accused of infringement.

III. PRIORITY AND CONCEPTION DATES FOR THE ASSERTED CLAIMS

Plaintiffs have alleged that the Asserted Claims are entitled to the priority dates shown below:

Asserted Patent	Asserted Claims	Priority Date
6,854,284	10-13, 15-17	October 3, 2002 (filing date of U.S. App. 10/262,879)
6,868,683	10-15	October 3, 2002 (filing date of U.S. App. 10/262,879)
6,868,682	1-4, 7-10	January 16, 2003 (filing date of U.S. App. 10/345,723)
7,939,967	1-11	June 25, 2009 (filing date of U.S. App. 12/491,773)

Defendant understands Plaintiffs are not asserting an invention date, conception, reduction to practice, design, and/or development of the claimed invention, prior to the asserted priority dates identified above. To the extent Plaintiffs later allege that any such activities occurred prior to the priority dates identified above, Defendant reserves the right to object to such belated changes in position and/or to supplement these Invalidity Contentions to address any such contention, including by identifying and/or charting additional prior art that may become relevant in view of such assertion. To the extent Plaintiffs allege that any prior art relied on in these Invalidity Contentions do not actually qualify as prior art to the Asserted Patents, Defendant reserves the right to rebut those allegations (e.g., by demonstrating an earlier critical date for the challenged prior art and/or a later priority date and/or date of invention for a particular Asserted Claim). Defendant also reserves the right to rely on additional documents, information, and evidence to demonstrate public availability or public availability by a certain date of a prior art reference or to rebut any efforts by Plaintiffs to allege any reference was not publicly available or publicly available by a certain date or otherwise available as prior art.

IV. STATE OF THE ART

This section describes the general state of the art surrounding the claimed inventions at the time of the alleged invention and identifies a number of prior art references providing additional background, detail, and context, on which Defendant may rely. Defendant sets forth additional

description and summary of the state of the art for each of the Asserted Patents in the Sections regarding the Disclosures of the Asserted Patents below. Defendant also intends to rely on each of the prior art references discussed below and in exhibits to these Invalidity Contentions for purposes of demonstrating the state of the art for the Asserted Patents. Defendant also reserves the right to rely on the discussions of the state of the art and prior art in each of the Asserted Patents and their file histories including explanations of the state of the art and the correspondence of prior art references with the claims of the Asserted Patents. Defendant further expressly reserves the right to supplement its summary of the state of the art, including for example, by information from any of the authors or named inventors on any of the prior art references, by personnel familiar with systems based on any of the prior art, or by technical experts retained on behalf of any party.

The Asserted Patents generally relate to systems and methods for delivering cooling to controlled building environments, such as data centers, and specifically for the '967 patent, uninterrupted power supplies. As indicated in Section III above, the priority dates for the Asserted Patents range from October 2002 to January 2003 for the Asserted Patents related to delivering cooling (the '284, '682, and '683 patents). By this timeframe, industry had, for decades, been acutely aware of the need to reliably deliver sufficient cooling to building environments, and specifically to data center racks in multiple zones. *See* claim charts A-1 *et seq.*, B-1 *et seq.*, C-1 *et seq.* For starters, HVAC equipment, such as air conditioning units, refrigerant and chilled water cooling coils, air handlers, heat pumps and heat exchangers, had been in use for decades. Further, electronic thermostats, (inclusive of temperature sensors, controllers and firmware), were well-known and widely used to maintain a desired temperature range in cooling zones found in data centers and other residential, commercial, and/or industrial settings. It was also widely known that different zones required different cooling needs based on the variability of the equipment and other

factors. Relatedly, the industry widely understood the need to promote efficiency by delivering sufficient cooling fluid to individual zones while avoiding delivering more than what was needed.

Indeed, as early as 1983, Vertiv's predecessor, Liebert Corporation, offered a series of Deluxe System/3 Cooling Water Systems, which became a widely known environmental control system for data centers used throughout the industry. These systems included many relevant features and functionalities (such as those identified in Charts B-17, and C-34) and became widely known and commercially implemented over the 20 years that followed prior to the priority dates of the Asserted Patents. For example, at least as early as 1985, Liebert's Deluxe System/3 Cooling Water systems varied the flow of cooling fluid to the air-to-fluid heat exchangers to address different cooling needs, such as in response to room temperature and humidity readings in a zone of a data center. *See* LIEBERT, DELUXE SYSTEM/3 TECHNICAL DATA MANUAL, SL-18100 (R 4/85) (1985) at 7. Additionally, Liebert's Deluxe System/3 Cooling Water systems were designed to promote energy efficiency when controlling the temperature in spaces such as data centers. *See, e.g.,* LIEBERT, DELUXE SYSTEM/3 CHILLED WATER SYSTEMS TECHNICAL DATA MANUAL, SL-18110 (R10/01) at 21 ("A variable speed drive (VSD) is available for models FH/UH600C, FH/UH599C, FH/UH740C, and FH/UH739C to reduce energy consumption. The fan motor speed shall be varied from 100% to 60% of rated speed in response to room conditions.").

In the same timeframe, Liebert offered a compressed refrigerant version of the Deluxe System/3. The "DX" model included a Dual Source Cooling capability that provided all the features of a compressed refrigerant system and a second cooling coil connected to a source of chilled water and individually controlled chilled water flow rate to each heat exchanger based on sensed temperatures to reduce compressor operation. *See, e.g.,* LIEBERT, DELUXE SYSTEM/3

OPERATIONS MANUAL 2000 at 3-4. Liebert also disclosed this design in multiple patents, including U.S. Patent No. 4,270,362 issued in June of 1981.

It appears that cooling-water-based Deluxe System units form a basis of Plaintiffs' Infringement Contentions, notwithstanding that the accused features of those systems had been widely and continuously promoted, sold and publicly used many years prior to the relevant priority dates.

No later than 1996, Liebert introduced its first Industrial Cooling Series System, which became another widely known environmental control system for data centers used throughout the industry. This system included many relevant features and functionalities that had become widely known and commercially implemented by the time of the priority dates of the Asserted Patents. For example, Liebert's Industrial Cooling Series System determined the heating or cooling requirements of a room or data center based on one or more temperature setpoints and varied a flow of cooling fluid to meet those heating or cooling requirements. *See, e.g.,* LIEBERT, INDUSTRIAL COOLING SERIES OPERATION AND MAINTENANCE MANUAL, SL-18530 at 40 ("The temperature control program for the advanced microprocessor is based on a calculated % requirement for cooling/ heating . . . , the % requirement is determined by the difference between the return air temperature and the temperature setpoint."); *id.* at 3 ("These systems utilize a central chiller and control cooling by modulating a control valve in the chilled water line.").

On information and belief, no later than July 2001, Liebert introduced its DataCool System and the Rack Cooler System, which provide targeted cooling at the racks and became widely used throughout the data center and/or cooling industry. These systems included many relevant features and functionalities that were widely known by the time of the priority dates of the Asserted Patents. For example, the DataCool System and the RackCooler System provide a "flexible, scalable and

space-saving solution that adds targeted cooling capacity to the base environmental equipment—taking care of enclosure hot spots where they occur.” LIEBERT, DATACOOl BROCHURE, SL-16700 (11/01) at 2; LIEBERT, RACKCOOLER BROCHURE, SL-16750 (11/01) at 2. These systems deployed a plurality of air-to-fluid heat exchangers to provide localized cooling at the racks, supplied chilled water as a cooling fluid to the heat exchangers, and provided for automatic control of the temperature of the cooling fluid and/or the flow rate of the cooling fluid, based on sensed temperature conditions in a data center. LIEBERT, DATACOOl BROCHURE, SL-16700 (11/01) at 4; LIEBERT, RACKCOOLER BROCHURE, SL-16750 (11/01) at 3-4. Cooling systems designed to automatically control the flow of cool air to different zones of a data center or building in response to sensed temperature data reflecting localized heat loads and cooling needs were also state-of-the-art as of the relevant priority dates. U.S. Patent No. 4,874,127, issued in October of 1989, is one of several references corroborating that it was well-known to deploy raised floor platforms for computer equipment integrated with temperature monitoring and control units operable to automatically adjust air flow partitions to direct controlled amounts of cooling to individual zones of the room based on localized heat loads.

Further details regarding relevant design, functions, features, principles of operation, and optimization of data center environmental control systems, widely known and available as of the respective priority dates of the Asserted Patents, are provided in the claim charts attached as A-1 *et seq.*, B-1 *et seq.*, C-1 *et seq.*, and the references and other evidence cited therein.

Separate from the other Asserted Patents, the '967 patent generally relates to uninterrupted power supplies. As indicated in Section III above, the priority date for the '967 patent is June 2009. By this timeframe, uninterrupted power supplies had been around for nearly 100 years, and the industry had, for decades, been acutely aware of the need to reliably supply power to computing

systems. *See* claim charts D-1 *et seq.* For starters, uninterrupted power supplies date back to the 1930s when John Hanley received U.S. Patent No. 1,953,602, which claims an uninterrupted power supply with first and second power sources and a warning signal that indicates failure of the first power supply. Since the 1930s, uninterrupted power supplies have been used in numerous industries, including hospitals, nuclear sites, water treatment facilities, emergency services, telecommunications, and computing systems. *See, e.g.*, U.S. Patent. App. Pub. No. 2008/0093930 ¶ 0004 (“UPS (Uninterruptable Power Supply) devices are widely utilized with computer platforms, such as servers or desktop computer[s], for supplying an electrical power in an uninterruptable manner.”). It was also widely known that various signals would be sent based on the availability of a power supply and that the power supply could transition between supplying different output levels based on various status signals.

Further details regarding relevant design, functions, features, principles of operation, and optimization of data center UPS systems, widely known and available as of the respective priority dates of the Asserted Patents, are provided in the claim charts attached as D-1 *et seq.*, and the references and other evidence cited therein.

V. P.R. 3-3(C) - INVALIDITY UNDER 35 U.S.C. §§ 102 AND 103

Each Asserted Claim of the Asserted Patents is invalid as anticipated by the prior art under various subsections of 35 U.S.C. § 102¹ and/or as obvious in view of the prior art under 35 U.S.C. § 103. Pursuant to P.R. 3-3(c), the charts attached to these invalidity contentions as charts A-1 *et seq.*, B-1 *et seq.*, C-1 *et seq.*, and D-1 *et seq.*, set forth how prior art identified by Defendant anticipates either expressly or inherently, and/or renders obvious, each Asserted Claim.

¹ Based on the priority dates of the Asserted Claims, Defendant applies sections 102 and 103 (pre-AIA).

In the charts, Defendant cites various relevant portions of the identified prior art references, but other portions may contain additional, cumulative, and/or different support for a particular claim limitation, and thus may additionally anticipate, either expressly or inherently, and/or render obvious, one or more of the Asserted Claims. Persons of ordinary skill in the art at the time of the filing of the Asserted Patents knew to read references as a whole, and in the context of other publications and literature and the general knowledge in the field.

Defendant also reserves the right to rely on other references disclosed or incorporated by reference in these Invalidity Contentions, in prior art references identified or charted in these contentions, in the Asserted Patents, any patents or applications related to the Asserted Patents, in the file history of the Asserted Patents, or any related patents or applications. Defendant's claim charts may disclose multiple theories of invalidity in a single chart.

Each chart directed to an anticipatory product/system may also describe that the product/system alone, in light of the knowledge and skill in the art, or in light of one or more other prior art references, renders each Asserted Claim obvious. Where Defendant cites to a particular figure in a prior art reference, the citation should be understood to encompass the caption and description of the figure as well as any text relating to the figure in addition to the figure itself.

Conversely, where a cited portion of text refers to a figure, the citation should be understood to include the figure as well. Furthermore, while Defendant has generally identified at least one citation per limitation present in a reference or combination, every disclosure of the same or similar limitation in the same reference or combination is not necessarily identified. To focus the issues, Defendant cites particularly pertinent portions of identified references, even where a reference or combination may contain additional support for a particular claim element.

Thus, Defendant may rely on uncited portions of the prior art references for additional support or context for a particular element. Defendant may rely upon other prior art identified in future supplements, corroborating references, documentation, source code, products, and testimony, including materials obtained through further investigation and third-party discovery of the prior art identified herein, that demonstrates the invalidating functionality identified in these Invalidity Contentions or that show the state of the art in the relevant time period (irrespective of whether such references themselves qualify as prior art to the Asserted Patent), and expert testimony to provide context to or aid in understanding the cited portions of the identified prior art. Similarly, where there are multiple references relating to a single prior art product or system, Defendant may cite only to a single reference for a particular limitation, even though other references may also contain similar teachings. Thus, Defendant may rely on uncited references relating to a particular prior art document or system for additional support for a particular element. Any prior art disclosed as anticipating a limitation also renders that limitation obvious.

Additionally, persons of ordinary skill in the art at the time of the alleged inventions generally read a prior art reference as a whole and in the context of other publications and literature. Numerous prior art references, including those identified herein and in the attached exhibits, reflect common knowledge and the state, scope, and content of the prior art before the priority date of the Asserted Claims of the Asserted Patents. Defendant may rely on uncited portions of the prior art references and on other publications and expert testimony to provide context and as aids to understanding and interpreting the portions that are cited.

In general, a claimed invention is invalid due to obviousness “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary

skill in the art.” 35 U.S.C. § 103; *Graham v. John Deere Co.*, 383 U.S. 1, 13-14 (1966). The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including: “(1) the scope and content of the prior art; (2) the differences between the prior art and the claims; (3) the level of ordinary skill in the art at the time of invention; and (4) objective evidence of nonobviousness.” See *Miles Labs., Inc. v. Shandon, Inc.*, 997 F.2d 870, 877 (Fed. Cir. 1993); *Graham*, 383 U.S. at 17-18. The U.S. Supreme Court decision *KSR Int’l Co. v. Teleflex Inc.* reaffirmed *Graham*, 127 S. Ct. 1727, 1739 (2007) but further held that a claimed invention can be obvious even if there is no explicit teaching, suggestion, or motivation for combining the prior art to produce that invention.

To the extent that any claim limitation is not anticipated pursuant to 35 U.S.C. § 102, Defendant contends that any purported difference is such that the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged inventions, in view of the state of the art and knowledge of those skilled in the art under 35 U.S.C. § 103. Each Asserted Claim would have been obvious in view of each reference cited in the attached Exhibits pertaining to that Asserted Patent, either alone or combined with the knowledge that was possessed by one of ordinary skill in the art. Additionally, each Asserted Claim would have been obvious to one of ordinary skill in the art in view of the combination of any one of the prior art references identified in the attached Exhibits with one or more of the other references identified or discussed in the same Exhibits. Defendant reserves the right to illustrate the knowledge of one of ordinary skill in the art using any of the prior art references identified throughout these Invalidity Contentions, expert testimony, learned treatises, and/or testimony of prior art fact witnesses.

For each Asserted Patent, the prior art references identified herein are analogous prior art to the subject matter of the Asserted Claims and, for at least the reasons set forth herein, are

properly combinable. Because these prior art references for each Asserted Patent exist within a single field of art, particularly one in which individuals in the field often shared and collaborated on their work and where patents in the field of art have a common or related assignee (in some instances including the original assignee of the Asserted Patents), it would have been obvious for one of skill in the art to look from one piece of prior art to another in order to find any allegedly missing functionality or structure. The identified references therefore provide interrelated teachings and one of skill in the art would look to the concepts in any of these references when seeking to solve the problems purportedly addressed by the Asserted Claims.

Numerous prior art references, including those identified in the attached Charts, reflect common knowledge and the state of the prior art before the earliest claimed effective filing date of the Asserted Patents. It would have therefore been obvious to one of ordinary skill in the art to combine any of a number of prior art references to meet the limitations of the Asserted Claims. Defendant's identification of exemplary combinations below, in view of the factors and exemplary motivations to combine identified herein, does not preclude Defendant from identifying other invalidating combinations and reasons to combine as appropriate.

No showing of a specific motivation to combine prior art is required to combine the references identified herein and in the attached charts, because, for example, each combination of art would have had no unexpected results, and at most would simply represent a known alternative to one of skill in the art. *See KSR*, 127 S. Ct. at 1739-40 (rejecting Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). Indeed, the Supreme Court held that one of skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.*

at 1742. Nevertheless, in addition to the information contained herein, Defendant hereby identifies additional motivations and reasons to combine the cited art.

Clear and logical rationale to combine any of the references identified herein with others exists in the prior art references themselves, as well as from the interrelated teachings of other prior art references, common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the existence and nature of a known need or problem, and/or knowledge possessed by a person of ordinary skill. In addition, it would have been obvious to combine the prior art references identified herein because only a finite number of predictable solutions existed and/or because known work in one field of endeavor prompts variations based on predictable design incentives and/or market forces either in the same field or a different one. Additionally, the combinations of the prior art references identified herein would have been obvious because the combinations represent the known potential options with a reasonable expectation of success. Therefore, various reasons to combine the disclosed references exist. Defendant reserves the right to rely on the knowledge of those skilled in the art, the testimony of expert witnesses, and/or other prior art, to show that it would have been obvious to include allegedly missing limitation(s) and to explain the motivation to combine prior art elements.

Statements made by applicants of the Asserted Patents (“Applicants”) in the specification and/or during prosecution of the Asserted Patents and any related patents/applications, such as in the “Background of the Invention” section that describes the related art known to Applicants, are admissions that can be relied upon for both anticipation and obviousness determinations, regardless of whether the admitted prior art would otherwise qualify as prior art under the statutory categories set forth in 35 U.S.C. § 102. *See* MPEP §§ 2129 and 608.01(c). To the extent Plaintiffs

contend that the Asserted Claims are not invalid as anticipated by and/or obvious in view of the prior art under 35 U.S.C. §§ 102 and 103, Defendant reserves the right to rely on the Applicants' admitted prior art to demonstrate the invalidity of the Asserted Claims.

Additionally, Defendant believes that certain non-parties and current or former employees thereof may have possession of relevant information and/or documents constituting prior art to the Asserted Patents, including parties in related litigations. Defendant is continuing the investigation into these and other companies and their products. Defendant reserves the right to supplement these Invalidity Contentions to identify additional references, combinations, motivations to modify, or explanations for particular references based on any information and/or documents provided by the former employees and/or successors-in-interests of companies or individuals who may possess relevant information and/or documents constituting prior art to the Asserted Patents.

The concepts disclosed and claimed in each of the Asserted Patents are not new, and had been disclosed, used, offered for sale, sold, and/or practiced by others prior to the claimed priority date of the patents. The prior art identified herein and in the claim charts, individually or in combination, invalidates the Asserted Claims under 35 U.S.C. §§ 102 (a), (b), (e), (g) and § 103. Because discovery is ongoing, Defendant expects to gather additional information about the identified prior art, and other prior art, through third-party discovery or other discovery, and will thus amend and supplement these Invalidity Contentions once it obtains that discovery and has meaningful and reasonable time to analyze it. As described in more detail below, claims of the Asserted Patents are also invalid under 35 U.S.C. §§ 101 and 112.

Moreover, Defendant reserves the right to rely on inventor admissions concerning the scope of the prior art relevant to the Asserted Patents found in, inter alia, the prosecution histories of the Asserted Patents or related patents and/or patent applications, any testimony or declarations

of the named inventors concerning the Asserted Patents or related patents, and any papers or evidence submitted by Plaintiffs in connection with this litigation, any other pending or future litigation brought by Plaintiffs involving the Asserted Patents or related patents, or *inter partes* review proceedings involving the Asserted Patents or related patents. Defendant also may establish what was known to a person having ordinary skill in the art (“POSITA”) through references discussed above in connection with the state of the art and treatises, published industry standards, other publications, products, and/or testimony.

In this section, Defendant identifies products and systems that were sold, on-sale or publicly used or disclosed before the priority dates of the respective Asserted Patents. The products and/or systems offered for sale or publicly disclosed, and related information known, are identified below and in the claim charts. The sales, sales offers, and public use or disclosures include those made by Vertiv’s predecessor, Liebert Corporation, as well as by Automated Logic Corporation, Trane, and other entities identified in the charts below.

The tables below and accompanying claim charts identify items offered for sale or publicly used and, based on the current investigation and information reasonably available to Defendant, the estimated timing of when the product or system was first marketed, made commercially available for sale, became known within the data center cooling industry, and/or was otherwise made public. The sales records being produced under Bates No. EQUINIX_0012459 provide additional details regarding particular sales of such products and systems to particular Liebert resellers and customers. As discovery and investigation continues, Defendant reserves the right to identify, disclose and/or make available for inspection, additional facts, documents and things concerning the prior art products and systems, including the identity of the product/system’s

purchasers or recipients², additional details regarding the features and functionalities of the products/systems, physical samples representative of the products/systems, and software and/or source code for the products/systems.

A. P.R. 3-3(C) Disclosures for the '284 Patent

The tables below list prior art that anticipates and/or renders obvious one or more of the Asserted Claims. The attached claim charts in Exhibits A-1 *et. seq.* demonstrate where each limitation of the claims is found, either expressly or inherently in the larger context of the passage, or rendered obvious by, certain of the references listed below, as understood by a person having ordinary skill in the art. The following patents, publications, products and/or services are prior art under at least 35 U.S.C. §§ 102(a), (b), and/or (e).

1. Identification of Prior Art for the '284 Patent

Patent References

Chart	Patent Number	Citation	Country of Origin	Issue / Pub. Date
A-1	US5410448	Barker	US	April 25, 1993
A-2	US5863246	Bujak	US	January 26, 1999
A-3	US6672955	Charron	US	January 6, 2004 ³
A-4	US6019677	Demster	US	February 1, 2000
A-5	US5769315	Drees	US	June 23, 1998
A-6	US5979167	Kochavi	US	November 9, 1999
A-7	US6574104	Patel '104	US	June 3, 2003 ⁴
A-8	JP2002006992A	Takashi	JP	January 11, 2002
A-9	PCT/US2000/018459	Timmerman '459	WO	February 8, 2001
EA10	JPHO513975A	Tomojiro	JP	January 22, 1993

² Purchasers and recipients of Liebert products and systems include Liebert's resellers and customers.

³ Filed on September 3, 2002.

⁴ Published on April 10, 2003, and filed on October 5, 2001.

In addition, the references below are prior art to the '284 patent and relevant to the state of the art, obviousness and the knowledge of a POSITA as of the '284 patent priority date.

Patent/Publication No.	Country of Origin	Date of Issue/Publication	Relevant Priority Date	Short Title
6,188,189	US	Feb. 13, 2001	Dec. 23, 1999	Blake
2002/0020682	US	Feb. 11, 2003	June 29, 2001	Broome
4,126,269	US	Nov. 21, 1978	Nov. 21, 1978	Bruges
20020134544	US	Sept. 6, 2002	Sept. 6, 2001	DeVilbiss
6,401,463	US	May 30, 2002	Nov. 29, 2000	Dukhan
5,797,275	US	Aug. 25, 1998	Aug. 25, 1998	Forsman
6,544,309	US	Apr. 8, 2003	Apr. 12, 2000	Hoefer
2002168479A	JP	June 14, 2002	June 14, 2002	Inoue '479
6,539,736	US	Apr. 1, 2003	June 15, 2000	Isazawa
6,127,663	US	October 7, 1999	October 7, 1999	Jones '663
5,826,432	US	Oct. 27, 1998	Oct. 27, 1998	Ledbetter
5,906,315	US	May 25, 1999	May 25, 1999	Lewis
6,885,554	US	Apr. 26, 2005	Dec. 9, 1998	Reeck
6,612,365	US	Sept. 2, 2003	May 6, 2000	Saishu
JP2002122348A	JP	Apr. 26, 2002	Apr. 26, 2002	Shimizu '348
WO200186217	US	Nov. 15, 2001	May 9, 2000	Spinazzola
JPH08-152460A	JP	June 11, 1996	November 29, 1994	Suzuki et al.
2575429B2	JP	Oct. 24, 1996	Oct. 24, 1996	Taira
H10-030836A	JP	Feb. 3, 1998	Feb. 3, 1998	Uekusa

2. The Asserted Claims of the '284 Patent Would Have Been Obvious

If not anticipated, the Asserted Claims of the '284 patent would have been obvious. In particular, limitations, such as “activating a cooling system and opening a plurality of returns,” “sensing a pressure of said cooling fluid in the plenum,” “determining whether said sensed pressure is within a predetermined pressure range,” and “varying an intake of said cooling system through the plurality of returns in response to said sensed pressure falling outside of said predetermined pressure range” would have been obvious to a POSITA. For starters, the charted references in A-1 *et seq.* are single reference obviousness references in light of the knowledge of a POSITA. Furthermore, a person having ordinary skill in the art would have been motivated to modify or combine the references discussed in charts A-1 *et seq.* based on the disclosures identified and/or information that would have been generally known to a POSITA with reasonable expectations of success. Rationales and/or motivations for such modifications or combinations include:

- Combining the prior art elements according to known methods would have yielded predictable results.
- Simple substitution of one known limitation for another would have yielded predictable results.
- Use of a known technique to improve similar devices in the same ways.
- Applying a known technique to a known system ready for improvement.
- Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.
- Variations based on known work in the field.
- Teachings, suggestions, and/or motivations provided in the references themselves.

In particular, the '284 patent discloses “a cooling system for cooling racks in a data center, [where] cooling fluid is circulated in the data center by a cooling device having a fan.” '284 patent, Abstract. The '284 patent recognizes the need for efficient cooling of data centers, which requires

“modifying the return flow rate of cooling fluid [so that] relatively hot fluid may be removed from the data center while relatively cooler fluid may be allowed to remain.” *See, e.g.,* ’284 patent, 2:67–3:3. Thus, the ’284 patent seeks to address the need “by substantially controlling the amount of heated cooling fluid (e.g., heated air, return air, etc.) removed from the general vicinity of the components and the subsystems located in the racks.” ’284 patent, 4:5–11.

A POSITA would have been motivated by several factors, including:

- The need for efficient cooling in a data center comprising multiple racks with varied cooling needs;
- The need for sensing environmental conditions, such as temperature and air pressure, in specific critical locations within a data center, such as difficult-to-access spots at racks or spots next to high-energy use devices with significant temperature and air pressure gradients;
- The need to efficiently cool computer data centers, including by efficiently cooling zones, regions, sections, or racks within a data center by collecting temperature and air pressure data from data centers so that the computing equipment can be cooled based on actual cooling requirements;
- The need for energy saving when cooling data centers, such as by optimizing removal of heated air from the data center while maintaining cooled, fresher air within the data center;
- The need for sensors that provide continuous or periodic monitoring of environmental conditions within a data center;
- The need for providing a reliable system to monitor environmental parameters within a data center remotely to minimize access into the data center and provide safety failsafe mechanisms to avoid reaching critical conditions in data center due to failure of operations’ systems;
- The need for providing discriminate cooling and air flow to components and racks with elevated energy needs based on variable factors, such as usage, proximity to other such components, seasonal changes, etc.;
- A POSITA’s knowledge that temperature demands vary across components and racks inside data centers due to a plurality of factors, including component usage, location within data center, and air flow and temperature.

- A POSITA's knowledge that fans and compressors may be variably operated to affect environmental factors within a data center, such as temperature and air flow, and such variable usage will have energy usage impacts.
- A POSITA's knowledge that sensors can be placed in a variety of locations and affixed in those locations in a variety of ways, and that placement of such sensors will affect reading from the sensors based on their relative location to air flow patterns within a building.
- A POSITA's knowledge that vents and other mechanical means, which can be manually or automatically-operated in response to sensed measurements and preset conditions, can be employed, in addition to changes to fan speed, to affect the amount of air flow and air pressure of cooling systems.

Indeed, as shown below in this section, and in the corresponding claim charts, each of the prior art references recognizes the need to achieve these objectives and provide solutions similar to those of the '284 patent. Further, as provided in the claim charts, cooling systems with adjustable returns to discriminately remove heated air from computer housing centers were well known and methods for doing same were well-known. To the extent there are variations among the references in terms of how they achieve common objectives, such variations represent a finite number of alternative approaches that a POSITA would have reasonably understood would succeed. All told, the nature of these problems to be solved would have led a POSITA to incorporate any combination of the finite number of solutions disclosed, available and/or otherwise known with predictable results, an exercise involving nothing more than routine optimization of well-understood principles and components of cooling systems.

For example, Barker discloses "a system which automatically adjusts coolant flow over the circuitry, regardless of the number of circuit boards installed in an enclosure." Barker, 1:7–11. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-1. A POSITA would have been motivated to turn to Barker, and/or combine it with references directed to similar objectives, for solutions for maintaining "[c]onstant static are pressure" and constant flow across "air flow paths in the system." Barker, 1:14–18.

Bujak discloses a system for controlling the pressure at which conditioned air is provided by actively computing (*i.e.*, comparing) pressure setpoints with measured pressures at locations in a duct system that are upstream of where the conditioned air is provided. Bujak, Abstract. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-2. A POSITA would have been motivated to turn to Bujak, and/or combine it with references directed to similar objectives, for solutions for “provid[ing] a fan control for a [variable-air-volume] VAV System which does not always require that discharge duct pressure be maintained at an artificially high static pressure set point” and “provid[ing] a fan control which can adjust the fan discharge pressure to an appropriate level dictated by any load condition of the VAV system.” Bujak, 1:54–62.

Charron discloses “[a]n air flow management system for an Internet Data Center with rows of cabinets . . . located on an elevated floor . . . [and where f]resh air is supplied through the elevated floor in order to cool the heat generating elements . . . [and t]he volume of fresh air supplied through the elevated floor is controlled by openings whereby the static pressure in each tunnel can be controlled depending upon the heat generated.” Charron, Abstract. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-3. A POSITA would have been motivated to turn to Charron, and/or combine it with references directed to similar objectives, for solutions that promote “avoid wasting any cooling capacity” and help with “cooling capacity conflicts between adjacent equipment” where the equipment has different power loads. Charron, 1:66–2:8.

Demster discloses “[m]odular terminals for supplying conditioned air to spaces within buildings . . . [wherein the flexibility in arranging the modular terminal components] permits for selectively altering the flow pattern, quality, volume, and velocity of air introduced into a space [,

and that] are controlled in response to selected sensor readings.” Demster, Abstract. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-4. A POSITA would have been motivated to turn to Demster, and/or combine it with references directed to similar objectives, for solutions that “are readily adaptable to a wide number of HVAC applications,” (Demster, 2:20-23), and that provide “heating, ventilating, and air conditioning to meet a varying range of conditions in discrete spaces on a building floor, the method comprising means for an occupant of said discrete space to adjust the heating, ventilating, and air conditioning output of the modular boxes” (Demster, 2:44-49).

Drees discloses a system that “minimizes supply air temperature disturbances by controlling zone air dampers through a mapping of zone heat transfer requirements and damper positions.” Drees, Abstract. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-5. A POSITA would have been motivated to turn to Drees, and/or combine it with references directed to similar objectives, for solutions that “adjust[] the air flow rate . . . to minimize zone air flow disturbances.” Drees, 1:66-2:9.

Kochavi discloses a “central air conditioning system [with] a variable speed air blower assembly operative to force air past” certain system elements and where “the control system is operative to control the speed of operation of the first variable speed air blower at least partially in response to the total heat load in the plurality of enclosures.” Kochavi, 2:27–41. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-6. A POSITA would have been motivated to turn to Kochavi, and/or combine it with references directed to similar objectives, for solutions that avoid the “operation of a compressor at reduced speeds [that] results in inefficient operation of the compressor as well as require[e] an expensive speed controller for controlling the speed of the electric motor which drives the

compressor” in response to sensed parameters, such as “pressure in the main air duct.” Kochavi, 1:36–51.

Patel ’104 discloses “a smart cooling system for cooling racks in a data center [that] includes a cooling device for supplying cooling fluid to the racks[, which] includes a variable output fan and a variable capacity compressor[, a plenum having an inlet and a plurality of outlets, in which the inlet of the plenum is in fluid communication with the fan[and a] plurality of vents for delivering the cooling fluid to the racks[, wherein t]he vents are operable to vary a characteristic of the cooling fluid delivered through each of the vents.” Patel ’104, 2:15–26. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-7. A POSITA would have been motivated to turn to Patel ’104, and/or combine it with references directed to similar objectives, for solutions that provide, among others, “substantially focalized supply of cooling fluid to individual racks” and energy efficient usage of the system by operating the system substantially only as needed.” Patel ’104, 2:67-3:9.

Takashi discloses “an underfloor air-conditioning system for sending cold air to the inside of a computer installed on the floor to cool the computer, a cooling method for the computer, and a recording medium recording a cooling control program.” Takashi, [0001]. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-8. A POSITA would have been motivated to turn to Takashi, and/or combine it with references directed to similar objectives, for solutions to changes in flow rates of conditioned cold air being sent to computer installations, differentiating amount of conditioned cold air being sent to individual computers, and measuring and determining whether the cooling air being sent to the computer is being properly sent. *See* Takashi, [0005]–[0007].

Timmerman '459 discloses “a modular cooling system for conditioning air while utilizing an existing chilled water supply and source of water for humidification[that] is particularly useful in connection with large computer installations which require a continuous or near-continuous supply of conditioned air for reliable operation.” Timmerman '459, 1:7–15. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-9. A POSITA would have been motivated to turn to Timmerman '459, and/or combine it with references directed to similar objectives, for solutions for “producing a supply of conditioned air⁵ for humidity and pressure control” and “producing a supply of conditioned air to facilities external to a modular air handling system.” Timmerman '459, 3:24–4:15.

Tomojiro discloses a forced-air-type cooling system for providing cooling air to heat-generating equipment that is typically operation unattended over long periods of time and in hard-to-reach locations.” Tomojiro, [0001], [0003]. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. *See* Chart A-10. A POSITA would have been motivated to turn to Tomojiro and/or combine it with references directed to similar objectives, for solutions to consistently provide clean air to such remote, heat-generating devices despite changes in environmental conditions and to compensate for reductions in the cooling capacity to the device by the forced air system.” Tomojiro, [0005]–[0007].

Furthermore, a POSITA would have been motivated to combine with reasonable expectations of success, based on the disclosures identified therein and/or information that would have been generally known to a POSITA, any of the primary references A-1 *et. seq.* charted above

⁵ Timmerman defines conditioned air as “a supply of air that has been modified such that the volume, temperature, humidity, and purity of the air is within acceptable limits for the facilities, space, or equipment that is being serviced by an air handling system.” Timmerman, 2:13–18.

with: (1) any other such A-1 *et seq.* primary reference(s); (2) any reference disclosed in the section above for specific concepts claimed in the patent; (3) any statements made in the intrinsic record of the patent, and/or (4) the knowledge of one of ordinary skill in the art. By way of example and without prejudice to any other combinations of references, Defendant provides the following exemplary combinations, which would obviate the invention of the '284 Patent.

Exemplary Reference Combinations

Reference	In Combination With	Claims
Barker	Bujak Charron Demster Drees Kochavi Patel '104 Takashi Timmerman '459 Tomojiro	10-13, 15-17
Bujak	Barker Charron Demster Drees Kochavi Patel '104 Takashi Timmerman '459 Tomojiro	10-13, 15-17
Charron	Barker Bujak Demster Drees Kochavi Patel '104 Takashi Timmerman '459 Tomojiro	10-13, 15-17

Reference	In Combination With	Claims
Demster	Barker Bujak Charron Drees Kochavi Patel '104 Takashi Timmerman '459 Tomojiro	10-13, 15-17
Drees	Barker Bujak Charron Demster Kochavi Patel '104 Takashi Timmerman '459 Tomojiro	10-13, 15-17
Kochavi	Barker Bujak Charron Demster Drees Patel '104 Takashi Timmerman '459 Tomojiro	10-13, 15-17
Patel	Barker Bujak Charron Demster Drees Kochavi Takashi Timmerman '459 Tomojiro	10-13, 15-17

Reference	In Combination With	Claims
Takashi	Barker Bujak Charron Demster Drees Kochavi Patel '104 Timmerman '459 Tomojiro	10-13, 15-17
Timmerman '459	Barker Bujak Charron Demster Drees Kochavi Patel '104 Takashi Tomojiro	10-13, 15-17
Tomojiro	Barker Bujak Charron Demster Drees Kochavi Patel '104 Takashi Timmerman '459	10-13, 15-17

B. P.R. 3-3(C) Disclosures for the '683 Patent

The tables below list prior art that anticipates and/or renders obvious one or more of the Asserted Claims. The attached claim charts in Exhibits B-1 *et. seq.* demonstrate where each limitation of the claims is found, either expressly or inherently in the larger context of the passage, or rendered obvious by, certain of the references listed below, as understood by a person having ordinary skill in the art. The following patents, publications, products and/or services are prior art under at least 35 U.S.C. §§ 102(a), (b), and/or (e).

1. Identification of Prior Art for the '683 Patent

Chart	Patent / Publication No.	Citation	Country of Origin	Issue / Pub. Date
B-1	US2001/0042616	Baer	US	Nov. 22, 2001
B-2	US2002/0149911	Bishop	US	Oct. 17, 2002 ⁶
B-3	US6672955	Charron	US	Jan. 6, 2004 ⁷
B-4	US4874127	Collier	US	Oct. 17, 1989
B-5	JPH05-13975A	Kobashi	JP	Jan. 22, 1993
B-6	US5979167	Kochavi	US	Nov. 9, 1999
B-7	US6283380	Nakanishi	US	Sept. 4, 2001
B-8	US5718628	Nakazato	US	Feb. 17, 1998
B-9	US6574104	Patel '104	US	April 10, 2003 ⁸
B-10	US4259847	Pearse	US	Apr. 7, 1981
B-11	US6557624	Stahl	US	May 6, 2003 ⁹
B-12	JPH08152460A	Suzuki et al.	JP	June 11, 1996

Publications

Chart	Title	Author / Publisher	Date Published
B-13	SuperVision for Windows V2.6A User Guide ("SuperVision User's Guide")	Automated Logic Corporation	Nov. 10, 1998
B-14	WebCTRL Installation Guide (2000)	Automated Logic Corporation	2000
B-15	SuperVision Plus User's Guide	Automated Logic Corporation	2000

Product Sales, Offers for Sale, and/or Public Use or Disclosures

Chart	Description	Entity	Sale / Disclosure Date
B-16	SuperVision for Windows V2.6A	Automated Logic Corporation	January 2001 (and earlier)
B-17	WebCTRL System	Automated Logic Corporation	2000
B-18	SuperVision Plus System	Automated Logic Corporation	2000
B-19	Liebert Deluxe System/3 Cooling Water System - CW	Liebert	April 1983

⁶ Bishop was filed April 12, 2002.

⁷ Charron was filed September 3, 2002.

⁸ Patel '104 was filed on October 5, 2001.

⁹ Stahl was filed on August 9, 2000.

In addition, the below references are prior art to the '683 patent and relevant to the state of the art, obviousness, and the knowledge of a POSITA as of the '683 patent priority date.

Patent/Publication No.	Country of Origin	Date of Issue/ Publication	Relevant Priority Date	Short Title
WO200186217	US	Nov. 15, 2001	May 9, 2000	Spinazzola
2002/0134544	US	Sept. 6, 2002	Sept. 6, 2001	DeVilbiss
6,885,554	US	Apr. 26, 2005	Dec. 9, 1998	Reeck
6,612,365	US	Sept. 2, 2003	May 6, 2000	Saishu
6,544,309	US	Apr. 8, 2003	Apr. 12, 2000	Hoefer
6,539,736	US	Apr. 1, 2003	June 15, 2000	Isazawa
6,188,189	US	Feb. 13, 2001	Dec. 23, 1999	Blake
5,410,448	US	Apr. 25, 1995	August 10, 1993	Barker, III
2002006992A	JP	Aug. 24, 2005	Jan. 11, 2002	Ishida
H10-030836A	JP	Feb. 3, 1998	Feb. 3, 1998	Uekusa
2575429B2	JP	Oct. 24, 1996	Oct. 24, 1996	Taira
2002/0020682	US	Feb. 11, 2003	June 29, 2001	Broome
6,401,463	US	May 30, 2002	Nov. 29, 2000	Dukhan
5,906,315	US	May 25, 1999	May 25, 1999	Lewis
5,826,432	US	Oct. 27, 1998	Oct. 27, 1998	Ledbetter
5,797,275	US	Aug. 25, 1998	Aug. 25, 1998	Forsman
4,126,269	US	Nov. 21, 1978	Nov. 21, 1978	Bruges
2002168479A	JP	June 14, 2002	June 14, 2002	Inoue '479
2002122348A	JP	Apr. 26, 2002	Apr. 26, 2002	Shimizu '348
5,345,779	US	Sept. 13, 1994	Apr. 23, 1993	Feeney '779

Patent/Publication No.	Country of Origin	Date of Issue/ Publication	Relevant Priority Date	Short Title
5,467,609	US	Nov. 21, 1995	Apr. 23, 1993	Feeney '609
6,374,267	US	Apr. 16, 2002	Aug. 13, 1999	Tam
6,412,292	US	July 2, 2002	May 9, 2000	Spinazzola '292
6,557,357	US	May 6, 2003	Feb. 18, 2000	Spinazzola '357
6,494,050	US	Dec. 17, 2002	Feb. 18, 2000	Spinazzola '050
6,574,970	US	June 10, 2003	Feb. 18, 2000	Spinazzola '970
2004/0100770	US	May 27, 2004	Nov. 2, 2002	Chu
5,164,394	JP	June 29, 1993	December 13, 1991	Hanzawa
2,644,228	FR	September 14, 1990	March 13, 1989	Gerber
5,154,666	US	October 13, 1992	September 17, 1990	Wapner
4,732,318	US	March 22, 1988	January 17, 1986	Osheroff
0,914,738	JP	January 17, 1997	June 28, 1995	Ikeda
6,374,627	US	April 23, 2002	January 9, 2001	Schumacher
6,318,113	US	November 20, 2001	June 12, 2000	Levy
4,795,088	US	January 3, 1989	June 11, 1987	Kobayashi
4,729,292	US	March 3, 1988	October 29, 1986	Marton
5,980,381	US	November 9, 1999	September 8, 1998	McCormick
6,142,866	US	November 7, 2000	March 18, 1999	Wright
0 741 269	EP	June 11, 1996	April 29, 1996	Hayama

Patent/Publication No.	Country of Origin	Date of Issue/Publication	Relevant Priority Date	Short Title
2002-156136	JP	May 31, 2002	November 20, 2000	Inoue
01277155	JP	November 7, 1989	April 28, 1988	Nakao
05243770	JP	September 21, 1993	March 2, 1992	Horimoto
01/86217	WIPO	November 15, 2001	May 7, 2001	Spinazzola
5,345,779	US	September 13, 1994	April 23, 1993	Feeney 779
08105647	JP	April 23, 1996	October 3, 1994	Adachi
5,709,100	US	January 20, 1998	August 29, 1996	Baer
6,554,697	US	April 29, 2003	December 3, 1999	Koplin
6,535,382	US	March 18, 2003	April 12, 2001	Bishop

Title	Author/Publisher	Date Published	Short Title
Operation of Chilled Water Precision Air Systems White Paper #110	APC	2001	White Paper #110
Trane engineers newsletter: turning air distribution upside down . . . Underfloor Air Distribution	Stanke / Trane	December 17, 2001	Stanke

2. The Asserted Claims of the '683 Patent Would Have Been Obvious

If not anticipated, the Asserted Claims of the '683 patent would have been obvious. In particular, limitations, such as “activating a cooling system and opening a plurality of returns, said returns being configured to remove cooling fluid from various locations of [a] data center,” “supplying cooling fluid to various locations of the data center”, “sensing the temperatures of ... [datacenter] racks,” “determining whether ... sensed temperatures are within a predetermined

temperature range,” “varying said removal of said cooling fluid from said racks in response to said sensed temperatures being outside said predetermined temperature range,” “varying the supply of cooling fluid in response to varying said removal of said cooling fluid,” “decreasing the supply of said cooling fluid to said racks in response to a decrease in the removal of said cooling fluid,” “wherein at least one of said supply of cooling fluid and said return of cooling fluid is varied in response to one or more of cooling fluid flow, temperature, and pressure being outside a predetermined range,” “varying said removal of said cooling fluid from said racks comprises varying at least one of volume flow rate, velocity and direction of cooling fluid removal,” and “increasing the supply of said cooling fluid to said racks in response to an increase in the removal of said cooling fluid,” would have been obvious to a POSITA. For starters, the charted references in B-1 *et seq.* are single reference obviousness references in light of the knowledge of a POSITA. Further, a person having ordinary skill in the art would have been motivated to modify or combine the references discussed in charts B-1, *et seq.* based on the disclosures identified and/or information that would have been generally known to a POSITA with reasonable expectations of success, including but not limited to the references cited above in relation to the state of the art. Rationales and/or motivations for such modifications or combinations include:

- Combining the prior art elements according to known methods would have yielded predictable results.
- Simple substitution of one known limitation for another would have yielded predictable results.
- Use of a known technique to improve similar devices in the same ways.
- Applying a known technique to a known system ready for improvement.

- Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.
- Variations based on known work in the field.
- Teachings, suggestions, and/or motivations provided in the references themselves.

In particular, the '683 patent is directed to system(s) and method(s) for supplying cooling fluid, such as cooled air, to computing racks in data centers. The alleged improvement relates to “operating the cooling system to circulate cooling fluid substantially only as needed by the racks, [so that] the cooling system may be operated at a relatively more efficient manner as compared to conventional cooling systems.” *See, e.g.,* '683 patent, 17:12-20. In other words, the '683 patent seeks to promote cooling system efficiency and reduce operating costs, while ensuring the computing devices are sufficiently and reliably cooled. *Id.*; *see also id.*, 2:6-14.

A POSITA would have been motivated by several factors, including:

- The need to reliably deliver sufficient cooling to data center racks in multiple zones.
- The need to promote efficiency by delivering an optimum amount of cooling fluid and removing fluid from racks at an optimum velocity.
- The desire to eliminate “hot spots,” or local regions in a data center or equipment rack where the temperature exceeds a desired maximum.
- The conventional practice of estimating a temperature distribution in a room through a simulation tool and controlling flow rates and flow directions of cooled supply air and warm return air via fans, louvers, or vents on the basis of the simulation result.
- A POSITA’s knowledge and familiarity with the design and operation of raised floor platforms for supporting computer racks arranged within zones and providing pathways

for the delivery of cooled air to regions of the data center and for the return of warm air from the cooled regions.

- A POSITA's knowledge of the use of a thermostat, inclusive of firmware, controllers and temperature sensors, in a well-known manner, including the ability to input a set temperature or temperature range.
- A POSITA's knowledge of a thermostat's feedback loop that compares the detected temperature to the set temperature or temperature range and initiates application of heating or cooling fluid until the detected temperature is brought into range of the set temperature.
- A POSITA's knowledge that prior art and conventional practices directed to heating applications can also be used in cooling applications. A POSITA's knowledge that achieving a desired temperature in a zone or region by moving a heating or cooling fluid through an HVAC system is a function of the temperature of the fluid, the flow characteristics of the fluid, and the pressure differential of the fluid across the HVAC system, such that one or more variables may be changed to achieve desired temperature conditions at various locations.
- A POSITA's knowledge that a movable temperature sensor can perform the same functionality as a fixed temperature sensor.

Indeed, as shown below in this section, and in the corresponding claim charts, each of the prior art references recognize the need to achieve these objectives and provide solutions, including the use of adjusting multiple cooling agents based on sensory data, similar to those of the '683 patent. To the extent there are variations among the references in terms of how they achieve common objectives, such variations represent finite number alternative approaches that a POSITA

would have reasonably understood would succeed. All told, the nature of these problems to be solved would have led a POSITA to incorporate any combination of the finite number of solutions disclosed, available and/or otherwise known with predictable results, an exercise involving nothing more than routine optimization of well-understood principles and components of cooling systems.

For example, Baer discloses an “apparatus and method for cooling the air exiting an electronics enclosure” that includes the exemplary elements identified in the corresponding claim chart. Baer, Abstract; Chart B-1. A POSITA would have been motivated to turn to Baer, and/or combine it with references directed to similar objectives, for solutions that “provide more efficient cooling than is available from prior art devices and techniques.” Baer, Abstract.

Bishop discloses “an apparatus for providing cool air to electronic module cabinets” that includes the exemplary elements identified in the corresponding claim chart. Bishop, Abstract; Chart B-2. A POSITA would have been motivated to turn to Bishop, and/or combine it with references directed to similar objectives, for solutions that solve “the need for a more efficient cool air delivery system for use in critical environments,” and in particular, the “need for an air delivery system that can automatically alter air volume to module cabinets based on cabinet and/or component temperature.” Bishop, ¶0032.

Charron discloses an “air flow management system for an Internet Data Center” that includes the exemplary elements identified in the corresponding claim chart. Charron, Abstract; Chart B-3. A POSITA would have been motivated to turn to Charron, and/or combine it with references directed to similar objectives, for solutions that “properly control cooling capacity” and “avoid wasting any cooling capacity.” Charron, 1:45-2:8.

Collier discloses a climate control apparatus for raised floor data centers that includes the exemplary elements identified in the corresponding claim chart. Collier 1:1-15; Chart B-4. A

POSITA would have been motivated to turn to Collier, and/or combine it with references directed to similar objectives, for solutions that incorporate appropriate “controls to effect both generalized and localized control of cooling on an energy-efficient basis.” Collier, 2:63-3:4.

Kobashi discloses “an improved cooling device which provides ... desired air cooling by forcibly blowing cooling air onto equipment having a heat source” that includes the exemplary elements identified in the corresponding claim chart. Kobashi, [0001]; Chart B-5. A POSITA would have been motivated to turn to Kobashi, and/or combine it with references directed to similar objectives, for solutions that “provide an appropriate cooling device for ... heat generating equipment.” Kobashi, [0002].

Kochavi discloses a system that provides “conditioned air to a plurality of rooms wherein the temperature of each of the rooms may be controlled independently.” Kochavi, 9:13. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. Chart B-6. A POSITA would have been motivated to turn to Kochavi, and/or combine it with references directed to similar objectives, for solutions that avoid “inefficient operation.” Kochavi, 1:44:50.

Nakanishi discloses “[a]n air conditioning system and an air conditioning method . . . for quickly and effectively controlling the temperature in a room requiring cooling and keeping the room at a uniform temperature.” Nakanishi, Abstract. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. Chart B-7. A POSITA would have been motivated to turn to Nakanishi, and/or combine it with references directed to similar objectives, for solutions capable of “quickly responding to the fluctuation of temperature distribution in a computer room, properly controlling a temperature, and keeping an optimum temperature state.” Nakanishi, 1:35-50.

Nakazato discloses “an air conditioning method in which a cooling air is supplied through an air passageway formed below a floor into a forced air-cooling equipment disposed on the floor.” Nakazato, 1:6-12. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. Chart B-8. A POSITA would have been motivated to turn to Nakazato, and/or combine it with references directed to similar objectives, for solutions capable of providing “an air conditioning method which permits cooling an equipment within a room without fail, while reducing the facility cost and operating cost.” Nakazato, 1:50-57.

Patel '104 discloses a cooling system “configured to adjust cooling fluid flow to various racks located throughout a data center based upon the detected or anticipated temperatures at various locations throughout the data center.” Patel '104, Abstract. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. Chart B-9. A POSITA would have been motivated to turn to Patel '104, and/or combine it with references directed to similar objectives, for solutions related to “energy efficient utilization of a cooling system by operating them substantially only as needed,” individually varying “cooling fluid supply . . . in accordance with actual or anticipated temperatures of the heat generating components,” and substantially lowering “costs associated with operating the cooling system.” Patel '104, 2:64-3:13.

Pearse discloses a “an air conditioning system is disclosed in which the air conditioning capacity is stepped to a lower level upon reduced sensible air conditioning demand” for spaces with multiple zones. Pearse, Abstract. Disclosed embodiments include the exemplary elements identified in the corresponding claim chart. Chart B-10. A POSITA would have been motivated to turn to Pearse, and/or combine it with references directed to similar objectives, for solutions that provide “an air conditioning system with improved energy efficiency by operating the blower at reduced capacity” leading to “reduced operating costs and energy consumption.” Pearse, 1:42-54.

Stahl discloses a “method and system . . . for cooling a room having one or more heat generating objects” that includes the exemplary elements identified in the corresponding claim chart. Stahl, Abstract; Chart B-11. A POSITA would have been motivated to turn to Stahl, and/or combine it with references directed to similar objectives, for solutions providing “a cooling system having its cooling characteristics closely tailored to the heating characteristics of the equipment to be cooled.” Stahl, 2:1-11.

Suzuki et al. discloses a “heat exhaust cooling structure” for heat-producing technical equipment located in temperature-controlled rooms with multiple zones, that includes the exemplary elements identified in the corresponding claim chart. Suzuki et al, [0042]; Chart B-12. A POSITA would have been motivated to turn to Suzuki et al., and/or combine it with references directed to similar objectives, for solutions that “improve[] the efficiency of heat exhaust processing by adjusting the exhaust air volume.” Suzuki et al., [0042].

The prior art Automated Logic Corporation SuperVision, WebCTRL, and SuperVision Plus user guides and systems identified in charts B-16, B-17, and B-18, as well as the Liebert system identified in B-19, were widely known data center environmental control system used throughout the industry. A POSITA would have known of Automated Logic’s and Liebert’s solutions and understood their features and improvements to achieve objectives relating to efficiently supplying cooling fluid to computing racks in data centers. Therefore, a POSITA would have been motivated to combine these systems’ known features with references directed to similar objectives. Similarly, a POSITA would have been motivated to consult widely available Automated Logic literature relating to its systems, such as the literature disclosed in charts B-13, B-14, and B-15, for similar reasons.

Furthermore, a POSITA would have been motivated to combine with reasonable expectations of success, based on the disclosures identified therein and/or information that would have been generally known to a POSITA, any of the primary references B-1 *et seq.* charted above with: (1) any other such B-1 *et seq.* primary reference(s); (2) any reference disclosed in the section above for specific concepts claimed in the patent; (3) any statements made in the intrinsic record of the '683 patent, and/or (4) the knowledge of one of ordinary skill in the art, including without limitation the common general knowledge in the field as reflected by the art at the time of the alleged invention. By way of example and without prejudice to any other combinations of references, Defendant provides the following exemplary combinations, which would obviate the invention of the '683 patent.

Exemplary Reference Combinations

Reference	In Combination With	Claims
Baer	Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
Bishop	Baer Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse	10-15

Reference	In Combination With	Claims
	Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	
Charron	Baer Bishop Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
Collier	Baer Bishop Charron Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
Kobashi	Baer Bishop Charron Collier Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al.	10-15

Reference	In Combination With	Claims
	SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	
Kochavi	Baer Bishop Charron Collier Kobashi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
Nakanishi	Baer Bishop Charron Collier Kobashi Kochavi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
Nakazato	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000)	10-15

Reference	In Combination With	Claims
	SuperVision Plus User's Guide	
Patel '104	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10- 15
Pearse	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
Stahl	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15

Reference	In Combination With	Claims
Suzuki et al.	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
SuperVision User's Guide	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
SuperVision User's Guide	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	10-15
SuperVision User's Guide	Baer Bishop	10-15

Reference	In Combination With	Claims
	Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	
WebCTRL Installation Guide (2000)	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide SuperVision Plus User's Guide	10-15
SuperVision Plus User's Guide	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000)	10-15
SuperVision for Windows V2.6A	Baer Bishop Charron Collier	10-15

Reference	In Combination With	Claims
	Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	
WebCTRL System	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide SuperVision Plus User's Guide	10-15
SuperVision Plus System	Baer Bishop Charron Collier Kobashi Kochavi Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000)	10-15
Liebert Deluxe System/3 Cooling Water System - CW	Baer Bishop Charron Collier Kobashi Kochavi	10-15

Reference	In Combination With	Claims
	Nakanishi Nakazato Patel '104 Pearse Stahl Suzuki et al. SuperVision User's Guide WebCTRL Installation Guide (2000) SuperVision Plus User's Guide	

C. P.R. 3-3(C) Disclosures for the '682 Patent

The tables below list prior art that anticipates and/or renders obvious one or more of the Asserted Claims. The attached claim charts in Exhibits C-1 *et. seq.* demonstrate where each limitation of the claims is found, either expressly or inherently in the larger context of the passage, or rendered obvious by, certain of the references listed below, as understood by a person having ordinary skill in the art. The following patents, publications, products and/or services are prior art under at least 35 U.S.C. §§ 102(a), (b), and/or (e).

1. Identification of Prior Art for the '682 Patent

Chart	Patent / Publication No.	Citation	Country of Origin	Issue / Pub. Date
C-1	US2001/0042616	Baer	US	Nov. 22, 2001
C-2	US2004/0065097	Bash '097	US	Apr. 8, 2004
C-3	US2002/0124585	Bash '585	US	Sep. 12, 2002
C-4	US2002/0159232	Beitelmal '232	US	Oct. 31, 2002
C-5	US2004/0109288	Beitelmal '288	US	Jun. 10, 2004
C-6	US2003/0053293	Beitelmal '293	US	Mar. 20, 2003
C-7	US2002/0149911	Bishop	US	Oct. 17, 2002
C-8	US2003/0050003	Charron '003	US	Mar. 13, 2003
C-9	US4874127	Collier	US	Oct. 17, 1989
C-10	US2003/0193777	Friedrich	US	Oct. 16, 2003
C-11	US5535814	Hartman	US	Jul. 16, 1996
C-12	US4270362	Lancia	US	June 2, 1981
C-13	CA1187966A	Lunn	CA	May 28, 1985
C-14	US3384,155	Newton	US	May 21, 1968
C-15	US4732318	Osheroff	US	Mar. 22, 1988

Chart	Patent / Publication No.	Citation	Country of Origin	Issue / Pub. Date
C-16	US5076346	Otsuka	US	Dec. 31, 1991
C-17	US2003/0067745	Patel	US	Apr. 10, 2003
C-18	US4259847	Pearse	US	April 7, 1981
C-19	US2003/0200050	Sharma	US	Aug. 20, 1991
C-20	US5317907	Shimizu II	US	Jun. 7, 1994
C-21	US6209330	Timmerman	US	Apr. 3, 2001

Publications

Chart	Title	Author / Publisher	Date Published
C-22	Modeling Guide, Trace 700, Building Energy and Economic Analysis, Version 4 (“Trace 700”)	Trane	2001
C-23	Applications Engineering Manual, Multiple-Chiller-System Design and Control (“2001 Chiller Control”)	Trane	March 2001
C-24	Multiple Chiller System Design and Control, Applications Engineering Manual (“1987 Chiller Control”)	Trane	1987
C-25	Vav System Optimization, Critical Zone Reset, Engineers Newsletter (“1991 Engineers Newsletter”)	Trane	1991
C-26	The Threefold Challenge Of ... Ventilating Single-Duct VAV Systems, Engineers Newsletter (“1998 Engineers Newsletter”)	Trane	1998
C-27	Installation operation Maintenance, Series R Air-Cooled Helical Rotary Liquid Chiller (“2000 RTAC Manual”)	Trane	Dec. 2000
C-28	Advanced System Control Strategies, Engineers Newsletter (“EN Control Strategies”)	Trane	June 2000
C-29	LHCV Chiller System Control Strategy, Engineering Bulletin (“LHCV Chiller”)	Trane	Mar. 1992
C-30	turning air distribution upside down ... Underfloor Air Distribution, Engineers Newsletter (“2001 Engineers Newsletter”)	Trane	2001
C-31	Tracer Summit, Custom Programming, Volume 5 (“Tracer Programming Guide”)	Trane	May 1997
C-32	Liebert Deluxe System/3 Operation and Maintenance Manual, SL-18350 (Revised April 2000) (“DS/3 Operation Manual 2000”)	Liebert	2000

Product Sales, Offers for Sale, and/or Public Use or Disclosures

Chart	Description	Entity	Sale / Disclosure Date
C-33	Trane Air Cooled Chiller – Installations and Use in Field (“Trane Air Cooled	Trane	Multiple installations and uses from 1993-2001

Chart	Description	Entity	Sale / Disclosure Date
	Chiller – Installations and Use in Field”)		
C-34	Liebert Deluxe System / DX System - DX	Liebert	April 1983

In addition, the below references are prior art to the '682 patent and relevant to the state of the art, obviousness, and the knowledge of a POSITA as of the '682 patent priority date.

Patent / Publication No.	Citation	Country of Origin	Issue / Publication Date
US 6,487,463	Stepp	US	Nov. 26, 2002
US 6,005,762	Hiroi	US	Dec. 21, 1999
US 5,474,120	Severson	US	Dec. 12, 1995
US 5,467,607	Harvey	US	Nov. 21, 1995
US 6,182,742	Takahashi	US	Feb. 6, 2001
US 5,040,376	Ueno	US	Aug. 20, 1991

Title	Author / Publisher	Date Published	Short Title
Computer Room Air Conditioners, Pinnacle 1000 Series	Trane	November 1984	CRAC Manual

2. The Asserted Claims of the '682 Patent Would Have Been Obvious

If not anticipated, the Asserted Claims of the '682 patent would have been obvious. In particular, limitations, such as “receiving sensory data corresponding to a temperature from a subsystem in a data center,” “processing the sensory data by a first agent in a hierarchy of agents to determine if the subsystems in the data center is operating within a predetermined temperature range,” “adjusting a delivery rate for a cooling fluid using the first agent to keep the temperature range of the subsystem within the predetermined temperature range,” “requesting a second agent from the hierarchy of agents to process the sensory data when the first agent cannot keep the temperature range within the predetermined temperature range unless the second agent redistributes the cooling fluid being delivered to one or more areas in the data center,” “determining with a third agent from the hierarchy of agents the amount of cooling fluid to output

when at least the first and second agent cannot keep the subsystem operating within the predetermined temperature range,” “the third agent is a cooling system agent that monitors and controls one or more cooling systems that deliver a cooling fluid to the racks and rows according to the first agent and second agent,” “the sensory data is derived from one or more of the following: a temperature measurement of the at least one subsystem, a temperature measurement in a plenum, and a pressure measurement in a plenum,” “the hierarchy of agents corresponds to a hierarchy of subsystems and components in the data center and each agent is responsible for maintaining that each hierarchical portion of the subsystems operate within a predetermined temperature range,” “adjusting a delivery rate for a cooling fluid changes the volume of cooling fluid being delivered,” “redistributing the cooling fluid includes decreasing the amount of cooling fluid being delivered in one area of the data center and increasing the amount of cooling fluid being delivered to another area of the data center,” and “determining with a third agent from a hierarchy of agents the amount of cooling fluid to output when a pressure level associated with the cooling fluid output is not operating within the predetermined pressure range” would have been obvious to a POSITA. For starters, the charted references in C-1 *et seq.* are single reference obviousness references in light of the knowledge of a POSITA. Further, a person having ordinary skill in the art would have been motivated to modify or combine the references discussed in charts C-1, *et seq.* based on the disclosures identified and/or information that would have been generally known to a POSITA with reasonable expectations of success, including but not limited to the references cited above in relation to the state of the art. Rationales and/or motivations for such modifications or combinations include:

- Combining the prior art elements according to known methods would have yielded predictable results.

- Simple substitution of one known limitation for another would have yielded predictable results.
- Use of a known technique to improve similar devices in the same ways.
- Applying a known technique to a known system ready for improvement.
- Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.
- Variations based on known work in the field.
- Teachings, suggestions, and/or motivations provided in the references themselves.

In particular, the '682 patent discloses "Implementations of the present invention utilize distributed agents at various points in the cooling system to direct cooling fluid (e.g., airflow) to reduce power consumption and cool more effectively." *See, e.g.*, '682 patent, 4:5-9. In other words, the '682 patent purportedly seeks to promote cooling efficiency and reduce operating costs, while ensuring multiple computing devices are sufficiently cooled using distribute cooling agents. *Id.*

A POSITA would have been motivated by several factors, including:

- The need to reliably deliver sufficient cooling to data center racks in multiple zones of varying cooling needs;
- The desire to optimize the operation of cooling systems to provide effective cooling in an efficient manner;
- The known convenience of using sensor inputs to determine the cooling load;
- The known convenience of using multiple cooling agents;
- The known convenience of a distributed cooling system;

- A POSITA's knowledge of the fundamental technique of establishing predetermined desired atmospheric conditions, sensing current atmospheric conditions, and adjusting operating parameters to achieve the desired atmospheric conditions; and
- A POSITA's knowledge that making adjustments based on identified differences between actual and desired atmospheric conditions can help improve the effectiveness and efficiency of the cooling system.

Indeed, as shown below in this section, and in the corresponding claim charts, each of the prior art references recognize the need to achieve these objectives and provide solutions, including the use of adjusting multiple cooling agents based on sensory data, similar to those of the '682 patent. To the extent there are variations among the references in terms of how they achieve common objectives, such variations represent finite number alternative approaches that a POSITA would have reasonably understood would succeed. All told, the nature of these problems to be solved would have led a POSITA to incorporate any combination of the finite number of solutions disclosed, available and/or otherwise known with predictable results, an exercise involving nothing more than routine optimization of well-understood principles and components of cooling systems.

For example, Baer discloses “an apparatus and method for removing heat generated by the electronics within an enclosure from the room containing such enclosure” that includes the exemplary elements identified in the corresponding claim chart. Baer ¶ [0004]; Chart C-1. A POSITA would have been motivated to turn to Baer, and/or combine it with references directed to similar objectives, for solutions that solve “to remove the heat introduced by the electronics from the rooms where such equipment is operated using the conventional room air conditioning alone” and “to supplement the cooling capacity of the room air conditioning system to promote efficient operation.” Baer ¶¶ [0004]-[0005].

Bash '097 discloses “a cooling system for cooling racks in a data center” that includes the exemplary elements identified in the corresponding claim chart. Bash '097 ¶ [0005]; Chart C-2. A POSITA would have been motivated to turn to Bash '097, and/or combine it with references directed to similar objectives, for solutions that include “substantially increasing the cooling fluid flow to and/or from those racks dissipating greater amounts of heat and by substantially decreasing the cooling fluid flow to and/or from those racks dissipating lesser amounts of heat, the amount of energy required to operate the cooling system may be relatively reduced” and “enable computer room air conditioning (CRAC) units located at various positions throughout the data center to operate in a more efficient manner.” Bash '097 ¶ [0011].

Bash '585 discloses “a system for reducing the temperature of components in a computer system” that includes the exemplary elements identified in the corresponding claim chart. Bash '585 ¶ [0002]; Chart C-3. More specifically, Bash '585 describes “the present invention relates to a refrigeration system for cooling a plurality of components in a computer system. The refrigeration system includes a compressor for controlling the flow of refrigerant through a refrigerant line and a plurality of evaporators configured to receive the refrigerant flowing from the compressor.” Bash '585 ¶ [0009]. A POSITA would have been motivated to turn to Bash '585, and/or combine it with references directed to similar objectives, for solutions that prevent “the possibility that the processors will overheat” and for solutions that “reduce any temperature variation among the processors.” Bash '585 ¶¶ [0004], [0027].

Beitelmal '232 discloses “cooling systems for electrical and electronic components and subsystems, and more particularly to air cooling of electrical and electronic components,” that includes the exemplary elements identified in the corresponding claim chart. Beitelmal '232 ¶ [0001]; Chart C-4. A POSITA would have been motivated to turn to Beitelmal '232, and/or

combine it with references directed to similar objectives, for solutions that “cool the components is to provide a cooling airflow through the enclosure in order to remove heat that is generated by operating components” and “effectively cooling the heat dissipating components of an electronic system without increasing the system's enclosure size and cost.” Beitelmal ’232 ¶¶ [0002], [0005].

Beitelmal ’288 discloses “a method of cooling a plurality of racks in a data center. In this method, a cooling device is activated and a controllable partition configured to vary a supply of cooling fluid within a zone of the data center is opened,” that includes the exemplary elements identified in the corresponding claim chart. Beitelmal ’288 ¶ [0005]; Chart C-5. A POSITA would have been motivated to turn to Beitelmal ’288, and/or combine it with references directed to similar objectives, for solutions that “vary their cooling fluid output based on the distributed needs of the data center,” and “vary the volume flow of cooling fluid according to fluctuations in the cooling requirements.” Beitelmal ’288 ¶¶ [0003]-[0004].

Beitelmal ’293 discloses “electronic component cooling systems,” that includes the exemplary elements identified in the corresponding claim chart. Beitelmal ’293 ¶ [0001]; Chart C-6. Specifically, Beitelmal ’293 discloses “a method of efficiently cooling a plurality of heat generating components of an electronic system having an enclosure and a plenum located within the enclosure. In the method, at least one variable speed blower and a plurality of valves are activated” Beitelmal ’293 ¶ [0007]. A POSITA would have been motivated to turn to Beitelmal ’293, and/or combine it with references directed to similar objectives, for solutions that “efficiently cooling a plurality of heat generating components of an electronic system having an enclosure and a plenum located within the enclosure” and use “energy efficient utilization of a plurality of blowers by operating them substantially only as needed.” Beitelmal ’293 ¶¶ [0007], [0009].

Bishop discloses “an apparatus for providing cool air to electronic module cabinets” that includes the exemplary elements identified in the corresponding claim chart. Bishop at Abstract; Chart C-7. A POSITA would have been motivated to turn to Bishop, and/or combine it with references directed to similar objectives, for solutions that solve “the need for a more efficient cool air delivery system for use in critical environments,” and in particular, the “need for an air delivery system that can automatically alter air volume to module cabinets based on cabinet and/or component temperature.” Bishop ¶ [0032].

Charron '003 discloses “[a]n air flow management system for an Internet Data Center with rows of cabinets, the rows being located on an elevated floor and disposed in pairs wherein the front sides of the two rows face each other,” that includes the exemplary elements identified in the corresponding claim chart. Charron '003 at Abstract; Chart C-8. A POSITA would have been motivated to turn to Charron '003, and/or combine it with references directed to similar objectives, for solutions that “cool heat-generating elements,” solutions for “air flow management system for an Internet Data Center,” and solutions for “maintenance of the static pressure of the fresh air superior to the static pressure of the hot air.” Charron '003 ¶¶ [0001], [0015].

Collier discloses “[a] control system operates dampers adapted to regulate the flow of the air from the plenum space to the room interior or an individual basis, and the controls further regulate the output of the HVAC or climate control unit, both as to volume and temperature,” that includes the exemplary elements identified in the corresponding claim chart. Collier, 3:56-61; Chart C-9. A POSITA would have been motivated to turn to Collier, and/or combine it with references directed to similar objectives, for solutions that “provide a computer room or the like having a control system adapted to regulate air flow individually among the individual pieces of equipment disposed in the room, and to have all such controls used in association with an

uninterrupted plenum space forming a part of, or disposed beneath a multi-level raised access flooring system.” Collier, 2:56-62.

Friedrich discloses “An energy management system for one or more computer data centers, including a plurality of racks containing electronic packages,” that includes the exemplary elements identified in the corresponding claim chart. Friedrich, Abstract; Chart C-10. A POSITA would have been motivated to turn to Friedrich, and/or combine it with references directed to similar objectives, for solutions that “substantially guarantee proper operation, and to extend the life of the electronic packages arranged in the data center, it is necessary to maintain the temperatures of the packages within predetermined safe operating ranges.” Friedrich ¶ [0004].

Hartman discloses “A variable air volume heating and cooling system that provides automatic system-wide airflow balancing is disclosed.” that includes the exemplary elements identified in the corresponding claim chart. Hartman, Abstract; Chart C-11. A POSITA would have been motivated to turn to Hartman, and/or combine it with references directed to similar objectives, for solutions that provide “automatic system-wide airflow balancing in which box maximum airflow settings are adjusted in response to the central fan conditions as well as local zone conditions” and “reduce the frequency and cost of rebalancing a variable air volume system. Moreover, the need remains to improve the accuracy of balancing such a system so as to maximize user comfort and operating economy.” Hartman, 2:24-29.

Lancia discloses “temperature and humidity electrical/electronic control circuits and apparatus to maintain a room at a constant temperature and humidity” that include the exemplary elements identified in the corresponding claim chart. Lancia, Abstract; Chart C-12. A POSITA would have been motivated to turn to Lancia, and/or combine it with references directed to similar objectives, for a solution “capable of responding to a correspondingly broad range of temperature

conditions both within the zone” while ensuring “energy conservation is enhanced.” Lancia, 2:47-58.

Lunn discloses “[a] system for controlling heating and cooling of sub zones in a building each having its own thermostat,” that includes the exemplary elements identified in the corresponding claim chart. Lunn, Abstract; Chart C-13. A POSITA would have been motivated to turn to Lunn, and/or combine it with references directed to similar objectives, for solutions that “control of heating, cooling and ventilation systems which provides specific and complex sub-zone control particularly in systems suitable for large buildings using a central source of heat or cooling.” Lunn, 2:1-8.

Newton discloses “[a]n air condition system in which heated and chilled liquid heat exchange medium is alternatively made available to the heat exchange units in various zones,” that includes the exemplary elements identified in the corresponding claim chart. Newton, Abstract; Chart C-14. A POSITA would have been motivated to turn to Newton, and/or combine it with references directed to similar objectives, for solutions that “the temperature in each room (or at least a small group of rooms) can be independently controlled” and “provide a low-cost air conditioning system in which the temperature in various zones can be individually controlled. Newton, 1:24-26, 2:30-33.

Osheroff discloses “a forced air heating and/or cooling system for regulating the temperature, for example, within a building,” that includes the exemplary elements identified in the corresponding claim chart. Osheroff, 1:10-13; Chart C-15. Specifically, Osheroff discloses “[a] multizone temperature control system for a building furnishes a supply of air, heated or cooled to a preselected temperature, to all or a selected group of the temperature control zones by means of a central fan or fans that blow air over a number, such as two, three or more, of heat exchangers,

each coupled with a cooling compressor or a heater.” Osheroff, 2:23-29. A POSITA would have been motivated to turn to Osheroff, and/or combine it with references directed to similar objectives, for solutions “for regulating the air flow within temperature control zones within a building, and for regulating the temperature controlling air supply.” Osheroff, 3:30-33.

Otsuka discloses “a duct type of air conditioner which adopts a variable air volume control system capable of controlling temperatures in a plurality of rooms independently,” that includes the exemplary elements identified in the corresponding claim chart. Otsuka, 1:9-12; Chart C-16. A POSITA would have been motivated to turn to Otsuka, and/or combine it with references directed to similar objectives, for solutions for “opening and closing of each damper depending on the temperature in the room with the corresponding damper, or determining automatically whether to select heating and cooling, depending on each room temperature and an external air, thereby realizing an optimum and effective operation control.” Otsuka, 4:55-60.

Patel discloses “cooling systems for data centers. More particularly, the invention pertains to a smart cooling system for delivering controlled amounts of cooling fluid, e.g., air, to various areas of a data center,” that includes the exemplary elements identified in the corresponding claim chart. Patel ¶ [0001]; Chart C-17. A POSITA would have been motivated to turn to Patel, and/or combine it with references directed to similar objectives, for solutions that “substantially independent control of the fluid supply to the racks; (3) energy efficient utilization of a cooling system by operating them substantially only as needed; (4) cooling fluid supply may be individually varied in accordance with actual or anticipated temperatures of the heat generating components; and (5) the costs associated with operating the cooling system of the invention may be substantially lower than with operating conventional cooling systems.” Patel ¶ [0009].

Pearse discloses “basically a constant volume system from the standpoint of design complexity and initial cost . . . [with] certain advantages over conventional constant volume systems in the areas of reduced operating costs and energy consumption. Satisfactory humidity control may be achieved without reheat and evaporator frosting is avoided. The instant invention involves a stepped reduction in blower capacity and a stepped change in heat exchange fluid flow at the air tempering heat exchanger” that includes the exemplary elements identified in the corresponding claim chart. Pearse, 1:42-51; Chart C-18. A POSITA would have been motivated to turn to Pearse, and/or combine it with references directed to similar objectives, for solutions that have are also directed to conditioning space while “reduced operating costs and energy consumption.” Pearse, 1:46.

Sharma discloses “controlling atmospheric conditions within a building. One type of building is a data center that houses numerous electronic packages. Each electronic package is arranged in one of a plurality of racks distributed throughout the data center,” that includes the exemplary elements identified in the corresponding claim chart. Sharma ¶ [0002]; Chart C-19. A POSITA would have been motivated to turn to Sharma, and/or combine it with references directed to similar objectives, for solutions that “adjust one or more of the quantity, quality, and distribution of a conditioned fluid throughout a data center.” Sharma ¶ [0012].

Shimizu discloses “a multi-type air-conditioning apparatus having a plurality of air-conditioning units connected to an outdoor unit,” that includes the exemplary elements identified in the corresponding claim chart. Shimizu, 1:9-13; Chart C-20. A POSITA would have been motivated to turn to Shimizu, and/or combine it with references directed to similar objectives, for solutions that “provide an air conditioning apparatus in which a drain pipe of a personal air-conditioning unit can be omitted, thereby making the construction thereof simple and the

construction therefor simple. The optimum capability corresponding to the number of personal air-conditioning units to be driven can be attained even when the total number of the personal air-conditioning units to be driven is small making it possible to always set up the comfortable air-conditioned environment.” Shimizu, 2:5-14.

Timmerman discloses “air handling systems and, more particularly, to a modular cooling system for conditioning air while utilizing an existing chilled water supply. Though not limited thereto, the present invention is particularly useful in connection with large computer installations which require a continuous or near-continuous supply of conditioned air for reliable operation,” that includes the exemplary elements identified in the corresponding claim chart. Timmerman, 1:5-12; Chart C-21. A POSITA would have been motivated to turn to Timmerman, and/or combine it with references directed to similar objectives, for solutions that have the “capability of automatically providing a variable volume and temperature of cooled air to facilities or equipment.” Timmerman, 4:51-58.

The prior art Trane Air Cooled Chiller – Installations and Use in Field and Liebert Deluxe System / DX System - DX identified in charts C-33 and C-34, respectively, were widely known data center environmental control systems used throughout the industry. A POSITA would have known of Trane’s and Liebert’s solutions and understood their features and improvements to achieve objectives relating to efficiently supplying cooling fluid to computing racks in data centers. Therefore, a POSITA would have been motivated to combine these systems’ known features with references directed to similar objectives. Similarly, a POSITA would have been motivated to consult widely available Trane and Liebert literature and Trane and Liebert newsletters relating to its systems, such as the literature disclosed in charts C-22, C-23, C-24, C-25, C-26, C-27, C-28, C-29, C-30, C-31, and C-32 for similar reasons.

Furthermore, a POSITA would have been motivated to combine with reasonable expectations of success, based on the disclosures identified therein and/or information that would have been generally known to a POSITA, any of the primary references C-1 *et seq.* charted above with: (1) any other such C-1 *et seq.* primary reference(s); (2) any reference disclosed in the section above for specific concepts claimed in the patent; (3) any statements made in the intrinsic record of the '682 patent, and/or (4) the knowledge of one of ordinary skill in the art, including without limitation the common general knowledge in the field as reflected by the art at the time of the alleged invention. By way of example and without prejudice to any other combinations of references, Defendant provides the following exemplary combinations, which would obviate the invention of the '682 patent.

Exemplary Reference Combinations

Reference	In Combination With	Claims
Baer	Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control	1-4, 7-10

Reference	In Combination With	Claims
	1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Bash '097	Baer Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osherooff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10
Bash '585	Baer Bash '097	1-4, 7-10

Reference	In Combination With	Claims
	Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Beitelmal '232	Baer Bash '097 Bash '585 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff	1-4, 7-10

Reference	In Combination With	Claims
	Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Beitelmal '288	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osherooff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual	1-4, 7-10

Reference	In Combination With	Claims
	EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Beitelmal '293	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10
Bishop	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288	1-4, 7-10

Reference	In Combination With	Claims
	Beitelmal '293 Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Charron '003	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse	1-4, 7-10

Reference	In Combination With	Claims
	Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Collier	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter	1-4, 7-10

Reference	In Combination With	Claims
	Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Friedrich	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10
Hartman	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003	1-4, 7-10

Reference	In Combination With	Claims
	Collier Friedrich Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Lancia	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman	1-4, 7-10

Reference	In Combination With	Claims
	Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Lunn	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000	1-4, 7-10

Reference	In Combination With	Claims
	Trane Air Cooled Chiller – Installations and Use in Field	
Newton	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10
Osheroff	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich	1-4, 7-10

Reference	In Combination With	Claims
	Hartman Lancia Lunn Newton Osheroﬀ Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Otsuka	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroﬀ Patel Pearse Sharma Shimizu Timmerman Trace 700	1-4, 7-10

Reference	In Combination With	Claims
	2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Patel	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10

Reference	In Combination With	Claims
Pearse	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10
Sharma	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia	1-4, 7-10

Reference	In Combination With	Claims
	Lunn Newton Osheroﬀ Otsuka Patel Pearse Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Shimizu	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroﬀ Otsuka Patel Pearse Sharma Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter	1-4, 7-10

Reference	In Combination With	Claims
	1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Timmerman	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10
Trace 700	Baer Bash '097 Bash '585	1-4, 7-10

Reference	In Combination With	Claims
	Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
2001 Chiller Control	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff	1-4, 7-10

Reference	In Combination With	Claims
	Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
1987 Chiller Control	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies	1-4, 7-10

Reference	In Combination With	Claims
	LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
1991 Engineers Newsletter	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10
1998 Engineers Newsletter	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293	1-4, 7-10

Reference	In Combination With	Claims
	Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
2000 RTAC Manual	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse	1-4, 7-10

Reference	In Combination With	Claims
	Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
EN Control Strategies	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osherooff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual LHCV Chiller 2001 Engineers Newsletter Tracer Programming Guide	1-4, 7-10

Reference	In Combination With	Claims
	DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
LHCV Chiller	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies 2001 Engineers Newsletter Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10
2001 Engineers Newsletter	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier	1-4, 7-10

Reference	In Combination With	Claims
	Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller Tracer Programming Guide DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
Tracer Programming Guide	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman	1-4, 7-10

Reference	In Combination With	Claims
	Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter DS/3 Operation Manual 2000 Trane Air Cooled Chiller – Installations and Use in Field	
DS/3 Operation Manual 2000	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Trane Air Cooled Chiller – Installations and Use in Field	1-4, 7-10

Reference	In Combination With	Claims
Trane Air Cooled Chiller – Installations and Use in Field	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton Osherooff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter DS/3 Operation Manual 2000	1-4, 7-10
Liebert Deluxe System / DX System - DX	Baer Bash '097 Bash '585 Beitelmal '232 Beitelmal '288 Beitelmal '293 Bishop Charron '003 Collier Friedrich Hartman Lancia Lunn Newton	1-4, 7-10

Reference	In Combination With	Claims
	Osheroff Otsuka Patel Pearse Sharma Shimizu Timmerman Trace 700 2001 Chiller Control 1987 Chiller Control 1991 Engineers Newsletter 1998 Engineers Newsletter 2000 RTAC Manual EN Control Strategies LHCV Chiller 2001 Engineers Newsletter Trane Air Cooled Chiller – Installations and Use in Field	

D. P.R. 3-3(C) Disclosures for the '967 Patent

The tables below list prior art that anticipates and/or renders obvious one or more of the Asserted Claims. The attached claim charts in Exhibits D-1 *et. seq.* demonstrate where each limitation of the claims is found, either expressly or inherently in the larger context of the passage, or rendered obvious by, certain of the references listed below, as understood by a person having ordinary skill in the art. The following patents, publications, products and/or services are prior art under at least 35 U.S.C. §§ 102(a), (b), and/or (e).

1. Identification of Prior Art for the '967 Patent

Chart	Patent / Publication No.	Citation	Country of Origin	Issue / Pub. Date
D-1	US2006/0262464	Bemat	US	Nov. 23, 2006
D-2	US5668417	Wiscombe	US	Sept. 16, 1997
D-3	US7906871	Freeman	US	Mar. 15, 2011
D-4	US7679217	Dishman	US	Mar. 16, 2010
D-5	US9831670	Humphrey	US	Nov. 28, 2017
D-6	US2008/0164759	Sharma	US	July 10, 2008
D-7	US2004/0070279	Liu	US	Apr. 15, 2004

Chart	Patent / Publication No.	Citation	Country of Origin	Issue / Pub. Date
	US2006/0208572	Zanksy	US	Sept. 21, 2006
	US2006/0290205	Heber	US	Dec. 28, 2006
	US2010/0077238	Vogman	US	Mar. 25, 2010
	US6501196	Lo	US	Dec. 31, 2002
	US2003/0023888	Smith888	US	Jan. 30, 2003
	US6854065	Smith065	US	Feb. 8, 2005
	US2009/0072623	Liao	US	Mar. 19, 2009
	US2007/02778860	Krieger	US	Dec. 6, 2007
	US2010/0019574	Baldassarre	US	Jan. 28, 2010

In addition, the below references are prior art to the '967 patent and relevant to the state of the art, obviousness, and the knowledge of a POSITA as of the '967 patent priority date.

Patent / Publication No.	Citation	Country of Origin	Issue / Publication Date
US4315162	Ferguson	US	Feb. 9, 1982
US2009/0167089	Dishman089	US	Jul. 2, 2009
US1953602	Hanley	US	Apr. 3, 1934
US4400626	Lacy	US	Aug. 23, 1983
US4879624	Jones	US	Nov. 7, 1989
US6031298	Lo298	US	Feb. 29, 2000
US6630752	Fleming	US	Oct. 7, 2003
US4860188	Bailey	US	Aug. 22, 1989
US5200643	Brown	US	Apr. 6, 1993
US5675480	Stanford	US	Oct. 7, 1997
US5894413	Ferguson413	US	Apr. 13, 1999
US7082042	Harris	US	July 25, 2006
US7368832	Peck	US	May 6, 2008
US7436950	Chheda	US	Oct. 14, 2008
US7701089	Shimizu	US	Apr. 20, 2010
US7802121	Zansky121	US	Sept. 21, 2010
US6191500	Toy	US	Feb. 20, 2001
US5204963	Noya	US	Apr. 20, 1993
US2003/0080624	Belson	US	May 1, 2003
US2005/0278075	Rasmussen	US	Dec. 15, 2005
US2009/0271642	Cheng	US	Oct. 29, 2009
US2005/0081069	Pincu	US	Apr. 14, 2005
US2008/0191552	Suzuki	US	Aug. 14, 2008
US2009/0224603	Perper	US	Sept. 10, 2009

Patent / Publication No.	Citation	Country of Origin	Issue / Publication Date
US2004/0070278	Divan	US	Apr. 15, 2004
US2008/0093930	Chen	US	Apr. 24, 2008
JP2008-108101	Akira	JP	May 8, 2008
JPH0538077A	Katsuhiko	JP	Feb. 12, 1993
JPH04347545A	Tsutomu	JP	Dec. 2, 1992
JPH05300673A	Toshinobu	JP	Nov. 12, 1993

Title	Author / Publisher	Date Published	Short Title
MX150 Microprocessor Controller Transfer Switch Control Panel	GE Zenith Controls	May 2003	MX150
GE Introduces New Automatic Transfer Switch Controls	GE	Dec. 9, 2003	MX150PR

2. The Asserted Claims of the '967 Patent Would Have Been Obvious

If not anticipated, the Asserted Claims of the '697 patent would have been obvious. In particular, limitations, such as “a first power supply coupled to an electrical load and a first source of electrical energy, the first power supply configured to issue an alert signal indicative of a failure condition of the first source of electrical energy,” “a second power supply coupled to the electrical load and a second source of electrical energy, the second power supply configured to transition from a lesser output level to a greater output level in response to an activation signal,” “the first power supply further configured to provide operating power to the electrical load while the second power supply transitions from the lesser output level to the greater output level,” “the first and second power supplies being coupled such that the activation signal is defined by the alert signal,” “the electrical load being configured to provide the activation signal to the second power supply in response to the alert signal from the first power supply,” “the first power supply further configured to transition from a lesser output level to a greater output level in response to a signal indicative of an anomaly in the second source of electrical energy,” “at least the first or second power supply configured to operate at a lesser output level in response to a standby signal, the first

power supply further configured to transition from the lesser output level to a greater output level in response to a respective activation signal,” “the first power supply further configured to provide operating level power from internal energy storage to an electrical load while the second power supply transitions from the lesser output level to the greater output level in response to the activation signal,” an electrical load,” “a first power supply coupled to a first independent source of electricity and to the electrical load, the first power supply configured to provide a first alert signal indicative of an anomalous condition of the first independent source of electricity, “a second power supply coupled to a second independent source of electricity and to the electrical load, the second power supply configured to provide a second alert signal indicative of an anomalous condition of the second independent source of electricity, the first power supply further configured to transition from a lesser output level to a greater output level in response to a first activation signal, the second power supply further configured to transition from a lesser output level to a greater output level in response to a second activation signal,” “at least the first or second power supply further configured to operate at a lesser output level in response to a standby signal,” and “the first and second power supplies respectively configured to provide operating level power to the electrical load for an amount of time sufficient for the other of the first and second power supplies to transition from the lesser output level to the greater output level.” For starters, the charted references in D-1 *et seq.* are single reference obviousness references in light of the knowledge of a POSITA for many, if not all, of the limitations above. Further, a person having ordinary skill in the art would have been motivated to modify or combine the references discussed in charts D-1, *et seq.* based on the disclosures identified and/or information that would have been generally known to a POSITA with reasonable expectations of success, including but not limited

to the references cited above in relation to the state of the art, as described in charts D-1, *et seq.* and below. Rationales and/or motivations for such modifications or combinations include:

- Combining the prior art elements according to known methods would have yielded predictable results.
- Simple substitution of one known limitation for another would have yielded predictable results.
- Use of a known technique to improve similar devices in the same ways.
- Applying a known technique to a known system ready for improvement.
- Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.
- Variations based on known work in the field.
- Teachings, suggestions, and/or motivations provided in the references themselves.

In particular, the '967 patent is directed to “[m]eans(s) and method(s) for providing redundant power supplies,” where the “two or more power supplies are each coupled to electrical energy at respective independent source[s].” '967 patent at 1:32-35. In other words, the '967 patent purportedly seeks to promote redundant power supplies, where a power supply can be transitioned to normal operation mode if the main power supply fails due to an anomalous condition. *Id.* at Abstract.

A POSITA would have been motivated by several factors, including:

- The need to provide continuous power to an electrical load (e.g., data center racks) that host information and/or store data;
- The need to efficiently provide power to an electrical load using redundant power supplies;

- The desire to detect faults or anomalies in a power supply that supplies electrical energy to an electrical load;
- The known convenience of using two or more redundant power supplies to ensure continuous power is provided to an electrical load;
- The known convenience of issuing alert signals when an anomaly in a power supply is detected;
- The known convenience of issuing an activation signal to transition a power supply from stand-by mode to normal operating mode;
- The known convenience of issuing a standby signal to transition a power supply from operating mode to a mode of lesser operation;
- The known convenience of using an internal energy storage to ensure that the electrical load continues to receive power during the transition from one power supply to the other; and
- A POSITA's knowledge of the fundamental technique of establishing a redundant power supply system to ensure that an electric load continuously receives power.

Indeed, as shown below in this section, and in the corresponding claim charts, each of the prior art references recognize the need to achieve these objectives and provide solutions, including the use of redundant power supplies and issuance of activation/alert signals, similar to those of the '967 patent. To the extent there are variations among the references in terms of how they achieve common objectives, such variations represent finite number alternative approaches that a POSITA would have reasonably understood would succeed. All told, the nature of these problems to be solved would have led a POSITA to incorporate any combination of the finite number of solutions disclosed, available and/or otherwise known with predictable results, an exercise involving nothing

more than routine optimization of well-understood principles and components of universal power supply systems.

For example, Bemat discloses a system with “two power supplies coupled to a load by way of a common conductive pathway” where “[e]ach supply also receives a signal from the other supply that is indicative of the operational status of the other supply. If the signal indicates that the other supply has failed, the remaining operational supply dynamically adjusts its output current threshold to a level sufficient to satisfy the current demand of the load.” Bemat ¶ [0013]; Chart D-1. A POSITA would have been motivated to turn to Bemat, and/or combine it with references directed to similar objectives, for solutions concerning how to continually supply power to a load, even in the event of a power supply failure, such as solutions related to “logic coupled to the ADC [alternating current-to-direct current converter] that receives the input signal and causes the output current threshold to be increased when the output signal from the other power supply indicates that the other power supply has experienced a failure.” Bemat at Abstract.

Wiscombe discloses “[a] power loss detection system for a power supply including a main converter for providing regulated power, an activation circuit for turning on and off the main converter based on an active low activation signal, a standby power circuit for providing a standby power signal, and an internal pullup resistor coupled between the standby power and activation signals.” Wiscombe at Abstract; Chart D-2. A POSITA would have been motivated to turn to Wiscombe, and/or combine it with references directed to similar objectives, for solutions “in a redundant power supply system for supplying power to a computer system, where both power supplies provide standby power,” and a system that “distinguishes between failure of a power supply versus failure of the supply’s power source.” Wiscombe at Abstract, 2:4-12, 2:42-3:5.

Freeman discloses a “system [that] typically includes two or more redundant power supplies, a load module and a disconnection module” where “[t]he redundant power supplies redundantly provide power to the load such that if one of the redundant power supplies fails, the remaining power supplies are capable of supplying power to the load while maintaining regulation of a voltage on a common bus connected to the load.” Freeman at 3:63-4:12; Chart D-3. A POSITA would have been motivated to turn to Freeman, and/or combine it with references directed to similar objectives for solutions that “improve the efficiency of power systems by reducing the power consumption of multiple redundant power supplies” and “redundantly provide power to the load such that if one of the redundant power supplies fails, the remaining power supplies are capable of supplying power to the load while maintaining regulation of a voltage on a common bus connected to the load.” Freeman at 2:30-42, 4:25-41.

Dishman discloses “[a]n apparatus, system, and method [] for a high efficiency redundant power system” with “[f]irst and second power supplies [that] are connected in parallel to a power load” and “[a] regulator control module [that] shuts down the regulator stage of the first power supply after the provided power falls below the predefined power threshold so the second power supply powers the load....” Dishman at Abstract; Chart D-4. A POSITA would have been motivated to turn to Dishman and/or combine it with references directed to similar objectives for solutions that “provide high efficiency redundant power supplies for power output less than about 50% of the capacity of the power supplies,” which “would increase the efficiency of redundant power supplies operated in parallel while still allowing for efficient fault recovery by providing redundancy protection and while meeting hold-up time requirements.” Dishman at 2:12-20.

Humphrey discloses a system with a “primary power supply [that] is configured to provide output current to a load when the primary power supply is operating normally” and a “redundant

supply [that] is configured to remain online while not providing output current to the load when the primary power supply is operating normally, but [that] begin[s] providing output current to the load when the primary power supply is not operating normally. Humphrey at Abstract; Chart D-5. A POSITA would have been motivated to turn to Humphrey and/or combine it with references directed to similar objectives for solutions “in which at least one redundant power supply in a system of electric power supplies is online but provides no output current during normal operation” where “redundancy is achieved for high availability, but efficiency is also improved because during normal operation the primary power supply does not share any of the load burden with the redundant supply.” Humphrey at 3:4-15. In this solution “the primary supply may operate at a higher portion of its available load range, where its power conversion efficiency is better.” *Id.*

Sharma discloses “methods and apparatus to realize a voltage level range based load switching, redundant, power supply architecture that includes at least two power supplies connected in parallel to a load and maintained in an energized state” and where “the first power supply continues to source current to the load until there is a fault condition or a failure of the first power supply that cuts off current supply to the load.” Sharma at [0020], [0021]; Chart D-6. A POSITA would have been motivated to turn to Sharma and/or combine it with references directed to similar objectives for solutions that “permit[] the use of a primary supply to source the low voltage loads, like the management power in the MicroTCA specification, which is 3.3+/-10% Volts, while the second power supply is in the standby mode, where a diode-drop based redundancy fails to meet this feature” and “permits the use of regulated, unregulated, and semi-regulated power supplies in an arrangement that can meet the redundancy requirements of standards like MicroTCA specification while overcoming the limitations of the diode-drop based redundancy configuration” that can result in “smaller thermal losses, lower component cost, simple

circuitry and non-complex control of power supplies for next generation electronics.” Sharma at [0023], [0024].

Liu discloses “systems and methods for automatically providing continuous power supply via standby uninterrupted power supplies (UPSs), and more particularly to systems and methods that periodically collect information on UPSs and electrically powered devices and automatically invoke standby UPSs for continuous power supply when a shutdown event occurs.” Liu at [0002]; Chart D-7. A POSITA would have been motivated to turn to Sharma and/or combine it with references directed to similar objectives for solutions that “provide a system which periodically collects information on UPSs and electrically powered devices and automatically invokes standby UPSs for continuous power supply when a shutdown event occurs.” Liu at [0009]; *see also* Liu at [0010]-[0012].

Furthermore, a POSITA would have been motivated to combine with reasonable expectations of success, based on the disclosures identified therein and/or information that would have been generally known to a POSITA, any of the primary references D-1 *et. seq.* charted above with: (1) any other such D-1 *et seq.* primary reference(s); (2) any reference disclosed in the section above for specific concepts claimed in the patent; (3) any statements made in the intrinsic record of the '967 patent, and/or (4) the knowledge of one of ordinary skill in the art, including without limitation the common general knowledge in the field as reflected by the art at the time of the alleged invention. By way of example and without prejudice to any other combinations of references, Defendant provides the following exemplary combinations, which would obviate the invention of the '967 patent.

Exemplary Reference Combinations

Reference	In Combination With	Claims
Bemat	Zansky	1-11

Reference	In Combination With	Claims
	Heber Vogman Lo Smith888 Smith065 Freeman Liao Krieger Baldassarre	
Wiscombe	Zansky Heber Vogman Lo Smith888 Smith065 Bemat Freeman Liao Krieger Baldassarre	1-11
Freeman	Zansky Heber Vogman Lo Smith888 Smith065 Bemat Liao Krieger Baldassarre	1-11
Dishman	Zansky Heber Vogman Lo Smith888 Smith065 Bemat Freeman Liao Krieger Baldassarre	1-11
Humphrey	Zansky Heber Vogman Lo	1-11

Reference	In Combination With	Claims
	Smith888 Smith065 Bemat Freeman Liao Krieger Baldassarre	
Sharma	Zansky Heber Vogman Lo Smith888 Smith065 Bemat Freeman Liao Krieger Baldassarre	1-11
Liu	Zansky Heber Vogman Lo Smith888 Smith065 Bemat Freeman Liao Krieger Baldassarre	1-11

VI. P.R. 3-4(D) - INVALIDITY UNDER 35 U.S.C. § 112

Pursuant to P.R. 3-3(d), and subject to Defendant's reservation of rights, Defendant provides the following contentions relating to the invalidity of the Asserted Claims under 35 U.S.C. § 112.¹⁰ The Asserted Claims of the Asserted Patents are invalid for lack of written description and/or

¹⁰ Based on Plaintiffs' contention as to the priority dates of the Asserted Claims, Defendant applies pre-AIA 35 U.S.C. § 112 here. However, to the extent that any other form of the patent statute (e.g., post-AIA) regarding invalidity for indefiniteness, non-enablement, or lack of written description applies, Defendant's invalidity contentions and analysis applies just the same.

enablement under 35 U.S.C. § 112, ¶ 1 and/or for failing to comply with the definiteness requirements of 35 U.S.C. § 112, ¶ 2. Defendant's contentions that the following claims are invalid under 35 U.S.C. § 112 are made in the alternative, and do not constitute, and should not be interpreted as, admissions regarding the construction or scope of the Asserted Claims, or that any of the Asserted Claims are not anticipated or rendered obvious by any prior art.

Defendant sets forth exemplary limitations that are invalid for failing to comply with these requirements. The disclosures below do not attempt to identify all recitations of a given term or phrase in each claim. Where Defendant has identified an instance of a term, phrase, or limitation in a particular claim that renders the claim invalid under Section 112, Defendant contends that every instance of the challenged term, phrase, or limitation, or similar term, phrase or limitation, in the claim renders the claim invalid for the same reasons. Where a particular claim term, phrase, or limitation is identified, Defendant contends that the identified term, phrase, or limitation, as well as the surrounding claim language in context as recited in the applicable claim, suffer from the identified Section 112 defect. Although complete phrases are sometimes identified below, Defendant reserves the right to argue any word or sub-phrase within a larger phrase also violates the written description, enablement, and/or definiteness requirements of 35 U.S.C. § 112. Furthermore, where a particular claim term, phrase, or limitation is identified with respect to one or more particular claims, Defendant contends that each other Asserted Claim that recites the same claim term, phrase, or limitation, or similar claim term, phrase, or limitation, is subject to the same Section 112 defect. Defendant contends that each dependent claim that depends from an independent claim that is invalid, as identified below, is also invalid for the same reasons.

In some instances, grounds upon which the Asserted Claims are invalid for failure to meet the requirements of 35 U.S.C. § 112 may be based upon the apparent constructions asserted by Plaintiffs.

These contentions shall not be construed as an admission that any claim construction advanced by Defendant in this case is in any way inconsistent, flawed, or erroneous. Nor should these contentions prevent Defendant from advancing claim construction and/or non-infringement positions in lieu of, or in addition to, these invalidity positions. Further these contentions shall not be construed as an admission of acquiescence to Plaintiffs' purported construction of the claim language or of other positions advanced by Plaintiffs during the course of this litigation. Defendant's invalidity contentions under 35 U.S.C. § 112 may depend, in part, on the Court's claim construction, as well as Plaintiffs' alleged scope of the Asserted Claims. Consequently, Defendant identifies only the issues under 35 U.S.C. § 112 of which it is presently aware.

Defendant's investigation of the Asserted Patents is ongoing, and Defendant reserves the right to amend or supplement these disclosures based on further investigation and in a manner consistent with the Federal Rules of Civil Procedure, the Local Patent Rules for the Eastern District of Texas, and the Docket Control Order, or otherwise in accordance with any order or direction of this Court or agreement of the parties. These contentions are being proffered without expert disclosure or discovery. Further, Plaintiffs' Infringement Contentions fail to provide sufficient detail to fully understand its proposed application of the Asserted Claims, and Defendant reserves the right to assert additional grounds for invalidity under 35 U.S.C. § 112 in response to Plaintiffs' claim interpretations. Defendant also reserves the right to supplement, modify, or otherwise amend these grounds for invalidity under 35 U.S.C. § 112 based on the Court's claim construction rulings or opinions or the parties' positions or arguments taken in connection with the claim construction process. Consequently, Defendant only identifies the issues under 35 U.S.C. § 112 of which it is presently aware. A more detailed basis for Defendant's indefiniteness, enablement, and/or written description defenses will be set forth in Defendant's claim construction briefing and/or expert

reports on invalidity and/or in Motion[s] for Summary Judgment of Invalidity, to be served in accordance with the Court’s Docket Control Order.

Subject to Defendant’s reservation of rights, Defendant identifies the following indefiniteness, written description, and enablement grounds with respect to the following Asserted Claims. The following does not purport to list every claim limitation to the foregoing disclosed grounds.

A. Legal Principles

1. Indefiniteness

The claims of a patent must “particularly point[] out and distinctly claim[] the subject matter which the inventor or a joint inventor regards as the invention.” 35 U.S.C. § 112, second paragraph. Claims are indefinite if they, “read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). “[I]t cannot be sufficient that a court can ascribe some meaning to a patent’s claim; the definiteness inquiry trains on the understanding of a skilled artisan at the time of the patent application, not that of a court viewing matters post hoc.” *Id.* at 911.

In evaluating indefiniteness, courts “look to the patent record—the claims, specification, and prosecution history—to ascertain if they convey to one of skill in the art with reasonable certainty the scope of the invention claimed.” *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1341 (Fed. Cir. 2015). Although “some modicum of uncertainty” is allowed to ensure “the appropriate incentives for innovation,” the claims nonetheless must be “precise enough to afford clear notice of what is claimed, thereby appris[ing] the public of what is still open to them.” *Nautilus*, 572 U.S. at 899 (alteration in original) (citations and internal quotation marks omitted). Ultimately, the

indefiniteness inquiry is not whether “a court can ascribe *some* meaning to a patent’s claims,” but rather whether the claims provide “objective boundaries.” *Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (quotation omitted) (discussing *Nautilus*). Claim scope cannot depend solely on the unrestrained, subjective opinion of a particular individual purported to be practicing the invention. *Datamize LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005).

A claim term can be indefinite based on multiple grounds ranging from the substantive concerns to unresolvable drafting errors, each of which can be fatal to the validity of the claims as a matter of law. For example, the Federal Circuit has repeatedly held that apparatus claims that contain method claim limitations are indefinite because it is impossible to determine when direct infringement occurs. *See, e.g., Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1339-40 (Fed. Cir. 2723) (an independent claim that recited both an apparatus and a method of using that apparatus was indefinite, as was its dependent claims); *IPXL Holdings v. Amazon.com*, 430 F.3d 1377, 1384 (Fed. Cir. 2005); *In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303, 1318 (Fed. Cir. 2723) (mixed claims “create confusion as to when direct infringement occurs because they are directed both to systems and to actions performed by” users). Claim terms that lack antecedent basis are indefinite. *See, e.g., Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1348-49 (Fed. Cir. 2002) (claim ending in the middle of a claim limitation was indefinite because it was “impossible to discern the scope of such a truncated limitation”). Furthermore, means-plus-function claims, which invoke 35 U.S.C. § 112 ¶ 6, may be invalid as indefinite where a patent owner has failed to disclose adequate corresponding structure linked to the recited claim functionality. *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311-12 (Fed. Cir. 2012).

Furthermore, when a claim includes a term of degree, such as “substantially” or “essentially,” the patent must provide “some standard for measuring” that degree. *See Exmark Mfg. Co. v. Briggs & Stratton Power Prods. Group, LLC*, 879 F.3d 1332, 1346 (Fed. Cir. 2018). When a claim includes a term of degree, the patent “must provide ‘some standard for measuring that degree’ such that the claim language provides ‘enough certainty to one of skill in the art when read in the context of the invention.’” *GE Lighting Solutions, LLC v. Lights of Am., Inc.*, 663 F. App’x 938, 940 (Fed. Cir. 2016) (alteration in original) (citation omitted); *see also Interval Licensing LLC*, 766 F.3d at 1370. For terms of degree, “the patent must provide that additional information in the form of ‘objective boundaries.’” *GE Lighting Solutions*, 663 F. App’x at 940 (citation omitted). And the Federal Circuit’s “case law is clear that the objective boundaries requirement applies to terms of degree.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018). A claim may also be indefinite if its language “‘might mean several different things’ and the patent itself identifies ‘no informed and confident choice . . . among the contending definitions.’” *Otsuka Pharm. Co., Ltd. v. Torrent Pharm. Ltd.*, 151 F. Supp. 3d 525, 545 (D.N.J. 2015) (quoting *Nautilus*, 135 S. Ct. at 2130 n.8).

Claims that depend from claims that are indefinite inherit the indefiniteness of the claims from which they depend and are therefore also indefinite.

2. Written Description

The first paragraph of 35 U.S.C. § 112 requires a patent specification to contain “a written description of the invention.” The written description must “reasonably convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1350 (Fed. Cir. 2010) (*en banc*) (citation omitted). If the claimed invention does not appear in the specification, the claim fails regardless of whether one of skill in the art could make or use the claimed invention. *See id.* at 1348. Establishing

possession as of the filing date is crucial as “[t]he purpose of the written description requirement is to prevent an applicant from later asserting that he invented that which he did not; the applicant for a patent is therefore required to ‘recount his invention in such detail that his future claims can be determined to be encompassed within his original creation.’” *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003). For example, a written description is inadequate where the claim in question exceeds the scope of what the patent discloses by omitting an attribute of the described invention from the limitations, thereby over-extending the reach of the claim. *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1377-78 (Fed. Cir. 2009). It is also insufficient that one of ordinary skill in the art might recognize that the disclosure could be modified in light of the prior art to arrive at the claimed subject matter. *Id.* at 1378-79 (citing *Eli Lilly*, 119 F.3d at 1566-67 (explaining that “an applicant complies with the written description requirement by describing the invention, with all its claimed limitations, *not that which makes it obvious*.” (internal quotation marks omitted, emphasis added))).

Claims that depend from claims that are invalid for lack of written description support inherit the deficiencies of the claims from which they depend and are also invalid.

3. Enablement

The enablement requirement of Section 112 is separate from and in addition to the written description requirement. *Ariad*, 598 F.3d at 1344. To meet the enablement requirement, the specification must enable a POSITA to “make and use the invention” across the full scope of the claim, “without undue experimentation.” *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988); *see Wyeth & Cord/s Corp. v. Abbott Labs.*, 720 F.3d 1380, 1384 (Fed. Cir. 2013); *see also LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1344-45 (Fed. Cir. 2005) (A patentee must “describe the manner and process of making and using the invention so as to enable a person of skill in the

art to make and use the full scope of the invention without undue experimentation.”). When “the teachings set forth in the specifications provide no more than a ‘plan’ or ‘invitation’ for those of skill in the art to experiment,” the claims are not enabled. *Enzo Biochem, Inc. v. Calgene, Inc.*, 188 F.3d 1362, 1374 (Fed. Cir. 1999). To determine whether “undue” experimentation is required, a court considers: “(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.” *Wands*, 858 F.2d at 737.

Claims that depend from claims that are invalid for lack of enablement inherit the deficiencies of the claims from which they depend and are also invalid.

B. Indefiniteness Contentions

Defendant contends that the Asserted Claims fail to particularly point out and distinctly claim the subject matter that the listed inventors regarded as their invention. Defendant contends that several Asserted Claims are invalid for indefiniteness under Section 112 ¶ 2 because they fail to inform, with reasonable certainty, those skilled in the art about the scope of the claimed invention. *See Nautilus*, 572 U.S. 898. Defendant provides below an identification of terms or phrases in Asserted Claims that render the Asserted Claims, at least as apparently construed by Plaintiffs in their Infringement Contentions, as discussed above, invalid, pursuant to 35 U.S.C. § 112 ¶ 2 as indefinite.

1. '284 Patent

The following terms or phrases of the Asserted Claims of the '284 patent are indefinite. Each such term or phrase lacks adequate precision or objective boundaries to afford clear notice of what is claimed and/or requires the exercise of subjective judgment. The specification and

prosecution history do not adequately describe the term or phrase such that a POSITA would understand with reasonable certainty the scope of the limitation[s] incorporating such term or phrase.

- “plurality of returns also being in fluid communication with a plenum” (Claims 10-13, 15-17)
- “decreasing the intake of said cooling system in response to said measured pressure falling below or equaling said predetermined minimum set point pressure.” (Claim 12)
- “increasing the intake of said cooling system in response to said measured pressure exceeding said predetermined minimum set point pressure” (Claim 13)
- “substantially independently controlling said plurality of returns” (Claim 15)
- “substantially independently vary said removal of said cooling fluid from said racks through said plurality of returns” (Claim 15)
- “the fan” (Claim 17)

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 2, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs’ infringement positions, and/or to account for any changes in the law concerning indefiniteness. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 2 including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs’ constructions may render certain terms indefinite. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any indefiniteness issues arising out of those exchanges.

2. '683 Patent

The following terms or phrases of the Asserted Claims of the '683 patent are indefinite. Each such term or phrase lacks adequate precision or objective boundaries to afford clear notice of what is claimed and/or requires the exercise of subjective judgment. The specification and prosecution history do not adequately describe the term or phrase such that a POSITA would understand with reasonable certainty the scope of the limitation[s] incorporating such term or phrase.

- “cooling a plurality of racks” (Claims 10-15)
- “activating a cooling system and opening a plurality of returns, said returns being configured to remove cooling fluid from various locations of said data center” (Claims 10-15)
- “various locations of the data center” (Claims 10-15)
- “sensing the temperatures of said racks” (Claims 10-15)
- “varying said removal of said cooling fluid from said racks in response to said sensed temperatures being outside said predetermined temperature range” (Claims 10-15)
- “varying the supply of cooling fluid in response to varying said removal of said cooling fluid” (Claims 10-15)
- “decreasing the supply of said cooling fluid to said racks in response to a decrease in the removal of said cooling fluid” (Claim 11)
- “wherein at least one of said supply of cooling fluid and said return of cooling fluid is varied in response to one or more of cooling fluid flow, temperature, and pressure being outside a predetermined range” (Claim 12)
- “varying at least one of volume flow rate, velocity and direction of cooling fluid removal” (Claim 13)
- “substantially independently controlling said plurality of returns” (Claim 14)
- “substantially independently vary said removal of said cooling fluid from said racks through said plurality of returns” (Claim 14)
- “said cooling fluid to said racks in response to an increase in the removal of said cooling fluid” (Claim 15)

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 2, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs' infringement positions, and/or to account for any changes in the law concerning indefiniteness. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 2 including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs' constructions may render certain terms indefinite. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any indefiniteness issues arising out of those exchanges.

3. '682 Patent

The following terms or phrases of the Asserted Claims of the '682 patent are indefinite. Each such term or phrase lacks adequate precision or objective boundaries to afford clear notice of what is claimed and/or requires the exercise of subjective judgment. The specification and prosecution history do not adequately describe the term or phrase such that a POSITA would understand with reasonable certainty the scope of the limitation[s] incorporating such term or phrase.

- “receiving sensory data” (Claims 1-4, 7-10)
- “receiving sensory data corresponding to a temperature from a subsystem in a data center” (Claims 1-4, 7-10)
- “processing the sensory data” (Claims 1-4, 7-10)
- “first agent” (Claims 1-4, 7-10)

- “hierarchy of agents” (Claims 1-4, 7-10)
- “predetermined temperature range” (Claims 1-4, 7-10)
- “processing the sensory data by a first agent in a hierarchy of agents to determine if the subsystems in the data center is operating within a predetermined temperature range” (Claims 1-4, 7-10)
- “adjusting a delivery rate for a cooling fluid” (Claims 1-4, 7-10)
- “adjusting a delivery rate for a cooling fluid using the first agent to keep the temperature range of the subsystem within the predetermined temperature range” (Claims 1-4, 7-10)
- “second agent” (Claims 1-4, 7-10)
- “requesting a second agent from the hierarchy of agents to process the sensory data” (Claims 1-4, 7-10)
- “unless the second agent redistributes the cooling fluid being delivered to one or more areas in the data center” (Claims 1-4, 7-10)
- “requesting a second agent from the hierarchy of agents to process the sensory data when the first agent cannot keep the temperature range within the predetermined temperature range unless the second agent redistributes the cooling fluid being delivered to one or more areas in the data center” (Claims 1-4, 7-10)
- “third agent” (Claims 2-3, and 10)
- “determining with a third agent from the hierarchy of agents” (Claims 2-3 and 10)
- “determining with a third agent from the hierarchy of agents the amount of cooling fluid to output when at least the first and second agent cannot keep the subsystem operating within the predetermined temperature range” (Claims 2-3)

- “cooling system agent” (Claim 3)
- “the third agent is a cooling System agent that monitors and controls one or more cooling Systems that deliver a cooling fluid to the racks and rows according to the first agent and Second agent” (Claim 3)
- “hierarchy of agents corresponds to a hierarchy of subsystems” (Claim 7)
- “hierarchy of agents corresponds to a hierarchy of Subsystems and components in the data center and each agent is responsible for maintaining that each hierarchical portion of the Subsystems operate within a predetermined temperature range” (Claim 7)
- “predetermined pressure range” (Claim 10)
- “determining with a third agent from a hierarchy of agents the amount of cooling fluid to output when a pressure level associated with the cooling fluid output is not operating within the predetermined pressure range” (Claim 10)

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 2, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs’ infringement positions, and/or to account for any changes in the law concerning indefiniteness. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 2 including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs’ constructions may render certain terms indefinite. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any indefiniteness issues arising out of those exchanges.

4. '967 Patent

The following terms or phrases of the Asserted Claims of the '967 patent are indefinite. Each such term or phrase lacks adequate precision or objective boundaries to afford clear notice of what is claimed and/or requires the exercise of subjective judgment. The specification and prosecution history do not adequately describe the term or phrase such that a POSITA would understand with reasonable certainty the scope of the limitation[s] incorporating such term or phrase.

- “a first power supply coupled to an electrical load and a first source of electrical energy” (Claims 1-8)
- “a second power supply coupled to the electrical load and a second source of electrical energy” (Claims 1-8)
- “the first and second power supplies being coupled such that the activation signal is defined by the alert signal” (Claim 3)
- “a first power supply coupled to a first independent source of electricity and to the electrical load” (Claims 9-11)
- “a second power supply coupled to a second independent source of electricity and to the electrical load” (Claims 9-11)
- “electrical load” (Claims 1-11)
- “greater output level” (Claims 1-11)
- “lesser output level” (Claims 1-11)
- “failure condition” (Claim 1)
- “activation signal” (Claims 1-11)
- “alert signal” (Claims 1-11)

- “operating power” (Claim 2)
- “anomaly” or “anomalous condition” (Claim 5, 9-11)
- “respective activation signal” (Claim 6)
- “operating level power” (Claims 8, 11)
- “internal energy storage” (Claim 8)
- “amount of time sufficient for the other of the first and second power supplies to transition from the lesser output level to the greater output level” (Claim 11)

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 2, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs’ infringement positions, and/or to account for any changes in the law concerning indefiniteness. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 2 including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs’ constructions may render certain terms indefinite. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any indefiniteness issues arising out of those exchanges.

C. Written Description Contentions

Defendant contends that the Asserted Claims are invalid because the Asserted Patents do not include sufficient written description of the purported inventions claimed therein, and of the manner and process of making and using said inventions, in such full, clear, concise, and exact

terms as to enable any person skilled in the art to which the inventions pertain, or which they are most nearly connected, to make and use any of the claimed inventions. 35 U.S.C. § 112 ¶ 1.

Defendant contends that the specifications to which priority is sought fail to describe the full scope of the claimed inventions in sufficient detail such that one skilled in the art could reasonably conclude that the inventor had possession of the claimed invention as of the filing dates to which the Asserted Patents claim priority. The specifications of the Asserted Patents fail to describe the claimed inventions in a manner understandable to one of ordinary skill in the art and fail to show that the listed inventors actually invented the claimed inventions. Accordingly, each of the Asserted Claims is invalid for lack of adequate written description under 35 U.S.C. § 112 ¶ 1.

Defendant provides below an identification of terms or phrases in Asserted Claims that lack written description support in the specification of the corresponding Asserted Patent, at least as apparently construed by Plaintiffs in their Infringement Contentions, as discussed above, rendering the Asserted Claims invalid pursuant to 35 U.S.C. § 112 ¶ 1.

1. '284 Patent

The Asserted Claims of the '284 patent are invalid for failure to comply with the written description requirements of Section 112 ¶ 1.

The '284 patent specification is narrowly drawn to a particular disclosed method and system for cooling a plurality of racks in a data center. Based on Defendant's understanding of Plaintiffs' Infringement Contentions, Plaintiffs are attempting to construe the Asserted Claims in a broad and ambiguous manner that is inconsistent with the more narrowly disclosed purported invention described in the written specification and prosecution history of the '284 patent as well as with the understanding of one of ordinary skill in the art at the time the application that issued

as the '284 patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history. Plaintiffs' apparent claim constructions render the Asserted Claims of the '284 patent overly broad in scope and would extend those claims well beyond the purported inventions described in the specification of the '284 patent.

The specification of the '284 patent does not provide sufficient written description or enablement of the aspects of the alleged invention corresponding to following claim limitations, rendering the Asserted Claims of the '284 patent in which they appear (and any claims depending therefrom) invalid:

Claim Term	Asserted Claims
"plurality of returns also being in fluid communication with a plenum"	10-13, 15-17
"decreasing the intake of said cooling system in response to said measured pressure falling below or equaling said predetermined minimum set point pressure"	12
"increasing the intake of said cooling system in response to said measured pressure exceeding said predetermined minimum set point pressure"	13

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 1, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs' infringement positions, and/or to account for any changes in the law concerning written description. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 1, including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs'

constructions may render certain terms unsupported by adequate written description. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any written description issues arising out of those exchanges.

2. '683 Patent

The Asserted Claims of the '683 patent are invalid for failure to comply with the written description and/or enablement requirements of Section 112 ¶ 1.

The '683 patent specification is narrowly drawn to a particular disclosed method and system for cooling a plurality of racks in a data center. Based on Defendant's understanding of Plaintiffs' Infringement Contentions, Plaintiffs are attempting to construe the Asserted Claims in a broad and ambiguous manner that is inconsistent with the more narrowly disclosed purported invention described in the written specification and prosecution history of the '683 patent as well as with the understanding of one of ordinary skill in the art at the time the application that issued as the '683 patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history. Plaintiffs' apparent claim constructions render the Asserted Claims of the '683 patent overly broad in scope and would extend those claims well beyond the purported inventions described in the specification of the '683 patent.

The specification of the '683 patent does not provide sufficient written description or enablement of the aspects of the alleged invention corresponding to following claim limitations, rendering the Asserted Claims of the '683 patent in which they appear (and any claims depending therefrom) invalid:

Claim Term	Asserted Claims
"activating a cooling system and opening a plurality of returns, said returns being	10-15

Claim Term	Asserted Claims
configured to remove cooling fluid from various locations of said data center”	
“varying said removal of said cooling fluid from said racks in response to said sensed temperatures being outside said predetermined temperature range”	10-15
“varying the supply of cooling fluid in response to varying said removal of said cooling fluid”	10-15
“decreasing the supply of said cooling fluid to said racks in response to a decrease in the removal of said cooling fluid”	11
“wherein at least one of said supply of cooling fluid and said return of cooling fluid is varied in response to one or more of cooling fluid flow, temperature, and pressure being outside a predetermined range”	12
“varying at least one of volume flow rate, velocity and direction of cooling fluid removal”	13
“said cooling fluid to said racks in response to an increase in the removal of said cooling fluid”	15

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 1, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs’ infringement positions, and/or to account for any changes in the law concerning written description. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 1, including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs’ constructions may render certain terms unsupported by adequate written description. Defendant

further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any written description issues arising out of those exchanges.

3. '682 Patent

The Asserted Claims of the '682 patent are invalid for failure to comply with the written description and/or enablement requirements of Section 112 ¶ 1.

The '682 patent specification is narrowly drawn to a particular disclosed method and system for controlling atmospheric conditions within an air-conditioned building. Based on Defendant's understanding of Plaintiffs' Infringement Contentions, Plaintiffs are attempting to construe the Asserted Claims in a broad and ambiguous manner that is inconsistent with the more narrowly disclosed purported invention described in written specification and prosecution history of the '682 patent as well as with the understanding of one of ordinary skill in the art at the time the application that issued as the '682 patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history. Plaintiffs' apparent claim constructions render the Asserted Claims of the '682 patent overly broad in scope and would extend those claims well beyond the purported inventions described in the specification of the '682 patent.

The specification of the '682 patent does not provide sufficient written description or enablement of the aspects of the alleged invention corresponding to the following terms of the Asserted Claims, rendering the Asserted Claims of the '682 patent in which they appear (and any claims depending therefrom) invalid:

Claim Term	Asserted Claims
"receiving sensory data"	1-4, 7-10
"receiving sensory data corresponding to a temperature from a subsystem in a data center"	1-4, 7-10
"processing the sensory data"	1-4, 7-10
"first agent"	1-4, 7-10

Claim Term	Asserted Claims
“hierarchy of agents”	1-4, 7-10
“predetermined temperature range”	1-4, 7-10
“processing the sensory data by a first agent in a hierarchy of agents to determine if the subsystems in the data center is operating within a predetermined temperature range”	1-4, 7-10
“adjusting a delivery rate for a cooling fluid”	1-4, 7-10
“adjusting a delivery rate for a cooling fluid using the first agent to keep the temperature range of the subsystem within the predetermined temperature range”	1-4, 7-10
“second agent”	1-4, 7-10
“requesting a second agent from the hierarchy of agents to process the sensory data”	1-4, 7-10
“unless the second agent redistributes the cooling fluid being delivered to one or more areas in the data center”	1-4, 7-10
“requesting a second agent from the hierarchy of agents to process the sensory data when the first agent cannot keep the temperature range within the predetermined temperature range unless the second agent redistributes the cooling fluid being delivered to one or more areas in the data center”	1-4, 7-10
“third agent”	2-3, 10
“determining with a third agent from the hierarchy of agents”	2-3, 10
“determining with a third agent from the hierarchy of agents the amount of cooling fluid to output when at least the first and second agent cannot keep the subsystem operating within the predetermined temperature range”	2-3
“cooling system agent”	3
“the third agent is a cooling System agent that monitors and controls one or more cooling Systems that deliver a cooling fluid to the racks and rows according to the first agent and Second agent”	3
“hierarchy of agents corresponds to a hierarchy of subsystems”	7
“hierarchy of agents corresponds to a hierarchy of Subsystems and components in the data center and each agent is responsible for maintaining that each hierarchical portion of	7

Claim Term	Asserted Claims
the Subsystems operate within a predetermined temperature range”	
“predetermined pressure range”	10
“determining with a third agent from a hierarchy of agents the amount of cooling fluid to output when a pressure level associated with the cooling fluid output is not operating within the predetermined pressure range”	10

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 1, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs’ infringement positions, and/or to account for any changes in the law concerning written description. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 1, including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs’ constructions may render certain terms unsupported by adequate written description. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any written description issues arising out of those exchanges.

4. ’967 Patent

The Asserted Claims of the ’967 patent are invalid for failure to comply with the written description and/or enablement requirements of Section 112 ¶ 1.

The ’967 patent specification is narrowly drawn to a particular disclosed method and system for controlling atmospheric conditions within an air-conditioned building. Based on Defendant’s understanding of Plaintiffs’ Infringement Contentions, Plaintiffs is attempting to construe the Asserted Claims in a broad and ambiguous manner that is inconsistent with the more

narrowly disclosed purported invention described in written specification and prosecution history of the '967 patent as well as with the understanding of one of ordinary skill in the art at the time the application that issued as the '967 patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history. Plaintiffs' apparent claim constructions render the Asserted Claims of the '967 patent overly broad in scope and would extend those claims well beyond the purported inventions described in the specification of the '967 patent.

The specification of the '967 patent does not provide sufficient written description or enablement of the aspects of the alleged invention corresponding to the following terms of the Asserted Claims, rendering the Asserted Claims of the '967 patent in which they appear (and any claims depending therefrom) invalid:

Claim Term	Asserted Claims
“activation signal is defined by the alert signal”	3
“respective activation signal”	6
“internal energy storage”	8
“amount of time sufficient for other of the first and second power supplies to transition from the lesser output level to the greater output level”	11

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 1, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs' infringement positions, and/or to account for any changes in the law concerning written description. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 1, including, for example, based on expert testimony. Plaintiffs' have not yet revealed their proposed constructions for the

terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs' constructions may render certain terms unsupported by adequate written description. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any written description issues arising out of those exchanges.

D. Enablement Contentions

Defendant contends that, at the time of Plaintiffs' claimed priority date, the patent applications to which Plaintiffs claim priority did not enable one of ordinary skill in the art to make and use the full scope of the claimed inventions without undue experimentation. Accordingly, each of the Asserted Claims is invalid for lack of enablement under 35 U.S.C. § 112 ¶ 1.

For example, the specification of the Asserted Patents does not provide sufficient enablement of the aspects of the alleged invention corresponding to following claim limitations, rendering the Asserted Claims in which they appear (and any claims depending therefrom) invalid.

1. '284 Patent

The Asserted Claims of the '284 patent are invalid for failure to comply with the enablement requirement of Section 112 ¶ 1.

The '284 patent specification is narrowly drawn to a specific disclosed method and system for cooling a plurality of racks in a data center. Based on Defendant's understanding of Plaintiffs' Infringement Contentions, Plaintiffs are attempting to construe the Asserted Claims in an idiosyncratic manner that is entirely inconsistent with the narrowly disclosed purported invention described in the written specification and prosecution history of the '284 patent as well as with the understanding of one of ordinary skill in the art at the time the application that issued as the '284 patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history. Plaintiffs' apparent claim constructions render

the Asserted Claims of the '284 patent overly broad in scope and would extend those claims well beyond the purported inventions enabled in the specification of the '284 patent.

The specification of the '284 patent does not provide sufficient written description or enablement of the aspects of the alleged invention corresponding to following claim limitations, rendering the Asserted Claims of the '284 patent in which they appear (and any claims depending therefrom) invalid:

Claim Term	Asserted Claims
“plurality of returns also being in fluid communication with a plenum”	10-13, 15-17
“decreasing the intake of said cooling system in response to said measured pressure falling below or equaling said predetermined minimum set point pressure”	12
“increasing the intake of said cooling system in response to said measured pressure exceeding said predetermined minimum set point pressure”	13

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 1, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs' infringement positions, and/or to account for any changes in the law concerning enablement. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 1, including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs' constructions may render certain terms not enabled. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any enablement issues arising out of those exchanges.

2. '683 Patent

The Asserted Claims of the '683 patent are invalid for failure to comply with the enablement requirement of Section 112, ¶ 1.

The '683 patent specification is narrowly drawn to a specific disclosed method and system for cooling a plurality of racks in a data center. Based on Defendant's understanding of Plaintiffs' Infringement Contentions, Plaintiffs are attempting to construe the Asserted Claims in an idiosyncratic manner that is entirely inconsistent with the narrowly disclosed purported invention described in written specification and prosecution history of the '683 patent as well as with the understanding of one of ordinary skill in the art at the time the application that issued as the '683 patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history. Plaintiffs' apparent claim constructions render the Asserted Claims of the '683 patent overly broad in scope and would extend those claims well beyond the purported inventions enabled by the specification of the '683 patent.

The specification of the '683 patent does not provide an enabling disclosure of the aspects of the alleged invention corresponding to following claim limitations, rendering the Asserted Claims of the '683 patent in which they appear (and any claims depending therefrom) invalid:

Claim Term	Asserted Claims
"activating a cooling system and opening a plurality of returns, said returns being configured to remove cooling fluid from various locations of said data center"	10-15
"varying said removal of said cooling fluid from said racks in response to said sensed temperatures being outside said predetermined temperature range"	10-15
"varying the supply of cooling fluid in response to varying said removal of said cooling fluid"	10-15

Claim Term	Asserted Claims
“decreasing the supply of said cooling fluid to said racks in response to a decrease in the removal of said cooling fluid”	11
“wherein at least one of said supply of cooling fluid and said return of cooling fluid is varied in response to one or more of cooling fluid flow, temperature, and pressure being outside a predetermined range”	12
“varying at least one of volume flow rate, velocity and direction of cooling fluid removal”	13
“said cooling fluid to said racks in response to an increase in the removal of said cooling fluid”	15

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 1, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs’ infringement positions, and/or to account for any changes in the law concerning enablement. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 1, including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs’ constructions may render certain terms not enabled. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any enablement issues arising out of those exchanges.

3. ’682 Patent

The Asserted Claims of the ’682 patent are invalid for failure to comply with the enablement requirement of Section 112 ¶ 1.

The '682 patent specification is narrowly drawn to a specific disclosed method and system for controlling atmospheric conditions within an air-conditioned building. Based on Defendant's understanding of Plaintiffs' Infringement Contentions, Plaintiffs are attempting to construe the Asserted Claims in an idiosyncratic manner that is entirely inconsistent with the narrowly disclosed purported invention described in written specification and prosecution history of the '682 patent as well as with the understanding of one of ordinary skill in the art at the time the application that issued as the '682 patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history. Plaintiffs' apparent claim constructions render the Asserted Claims of the '682 patent overly broad in scope and would extend those claims well beyond the purported inventions enabled by the specification of the '682 patent.

The specification of the '682 patent does not provide an enabling disclosure of the aspects of the alleged invention corresponding to the following terms of the Asserted Claims, rendering the Asserted Claims of the '682 patent in which they appear (and any claims depending therefrom) invalid:

Claim Term	Asserted Claims
"receiving sensory data"	1-4, 7-10
"receiving sensory data corresponding to a temperature from a subsystem in a data center"	1-4, 7-10
"processing the sensory data"	1-4, 7-10
"first agent"	1-4, 7-10
"hierarchy of agents"	1-4, 7-10
"predetermined temperature range"	1-4, 7-10
"processing the sensory data by a first agent in a hierarchy of agents to determine if the subsystems in the data center is operating within a predetermined temperature range"	1-4, 7-10
"adjusting a delivery rate for a cooling fluid"	1-4, 7-10
"adjusting a delivery rate for a cooling fluid using the first agent to keep the temperature"	1-4, 7-10

Claim Term	Asserted Claims
range of the subsystem within the predetermined temperature range”	
“second agent”	1-4, 7-10
“requesting a second agent from the hierarchy of agents to process the sensory data”	1-4, 7-10
“unless the second agent redistributes the cooling fluid being delivered to one or more areas in the data center”	1-4, 7-10
“requesting a second agent from the hierarchy of agents to process the sensory data when the first agent cannot keep the temperature range within the predetermined temperature range unless the second agent redistributes the cooling fluid being delivered to one or more areas in the data center”	1-4, 7-10
“third agent”	2-3, 10
“determining with a third agent from the hierarchy of agents”	2-3, 10
“determining with a third agent from the hierarchy of agents the amount of cooling fluid to output when at least the first and second agent cannot keep the subsystem operating within the predetermined temperature range”	2-3
“cooling system agent”	3
“the third agent is a cooling System agent that monitors and controls one or more cooling Systems that deliver a cooling fluid to the racks and rows according to the first agent and Second agent”	3
“hierarchy of agents corresponds to a hierarchy of subsystems”	7
“hierarchy of agents corresponds to a hierarchy of Subsystems and components in the data center and each agent is responsible for maintaining that each hierarchical portion of the Subsystems operate within a predetermined temperature range”	7
“predetermined pressure range”	10
“determining with a third agent from a hierarchy of agents the amount of cooling fluid to output when a pressure level associated with the cooling fluid output is not operating within the predetermined pressure range”	10

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 1, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiffs' infringement positions, and/or to account for any changes in the law concerning enablement. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 1, including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs' constructions may render certain terms not enabled. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any enablement issues arising out of those exchanges.

4. '967 Patent

The Asserted Claims of the '967 patent are invalid for failure to comply with the enablement requirement of Section 112 ¶ 1.

The '967 patent specification is narrowly drawn to a specific disclosed method and system for controlling atmospheric conditions within an air-conditioned building. Based on Defendant's understanding of Plaintiffs' Infringement Contentions, Plaintiffs are attempting to construe the Asserted Claims in an idiosyncratic manner that is entirely inconsistent with the narrowly disclosed purported invention described in written specification and prosecution history of the '967 patent as well as with the understanding of one of ordinary skill in the art at the time the application that issued as the '967 patent was filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history. Plaintiffs' apparent claim constructions render the Asserted Claims of the '967 patent overly broad in scope and would

extend those claims well beyond the purported inventions enabled by the specification of the '967 patent.

The specification of the '967 patent does not provide an enabling disclosure of the aspects of the alleged invention corresponding to the following terms of the Asserted Claims, rendering the Asserted Claims of the '967 patent in which they appear (and any claims depending therefrom) invalid:

Claim Term	Asserted Claims
"a first power supply coupled to an electrical load and a first source of electrical energy"	1-8
"a second power supply coupled to the electrical load and a second source of electrical energy"	1-8
"the first and second power supplies being coupled such that the activation signal is defined by the alert signal"	3
"a first power supply coupled to a first independent source of electricity and to the electrical load"	9-10
"a second power supply coupled to a second independent source of electricity and to the electrical load"	9-11
"configured to transition from a lesser output level to a greater output level"	1-11
"configured to issue an alert signal"	1-8
"configured to provide the activation signal"	4
"configured to provide a first alert signal"	9-11
"configured to provide a second alert signal"	9-11
"the activation signal is defined by the alert signal"	3
"configured to operate at a lesser output level"	6, 10
"amount of time sufficient for other of the first and second power supplies to transition from the lesser output level to the greater output level"	11

These are merely examples and are not intended to be limiting. Defendant reserves all rights to amend its Invalidity Contentions under 35 U.S.C. § 112 ¶ 1, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim

embodied in Plaintiffs' infringement positions, and/or to account for any changes in the law concerning enablement. Defendant additionally reserves the right to provide additional explanation and/or argument for its Invalidity Contentions under § 112 ¶ 1, including, for example, based on expert testimony. Plaintiffs have not yet revealed their proposed constructions for the terms in these patents. Once Plaintiffs have identified their proposed constructions, Plaintiffs' constructions may render certain terms not enabled. Defendant further expressly reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any enablement issues arising out of those exchanges.

VII.P.R. 3-4 – DOCUMENT PRODUCTION

A. P.R. 3-4(a) Disclosures

Pursuant to P.R. 3-4(a), Defendant has produced representative technical documentation within their possession, custody, and control that show the operation of aspects or elements of the Accused Instrumentalities identified by Plaintiffs in their Infringement Contentions. *See* EQUINIX_0001775 – EQUINIX_0007573. Defendant reserves the right to supplement these disclosures with additional documentation. Defendant may produce relevant computer source code for inspection in accordance with the parties' proposed Protective Order.

B. P.R. 3-4(b) Disclosures

In accordance with P.R. 3-4(b), Defendant is producing a set of prior art references identified in these Invalidity Contentions for prior art related to the Asserted Patents. Defendant is also producing prior art references and additional documentation concerning prior art systems and methods, including business records evidencing sales of equipment and software tools deployed in such prior art systems and methods prior to the applicable priority dates of the Asserted Patents. Such documents can be found at the following Bates range: EQUINIX_0007574 –

EQUINIX_0018228. Any prior art references not in English are produced with an English translation of the portion(s) relied upon. These prior art references are cited herein and support the contentions presented. Defendant's search for prior art references, additional documentation, and/or corroborating evidence concerning prior art systems and methods is ongoing. Accordingly, Defendant reserves the right to supplement its production, as provided by the Local Rules, as additional prior art references, additional documentation, and/or corroborating evidence concerning prior art documents/apparatuses, and methods are obtained during the course of discovery. Such additional evidence may include physical equipment specimens and/or source code evidence associated one or more prior art systems or methods obtained through further investigation and discovery.

VIII. PATENT SUBJECT MATTER INELIGIBILITY CONTENTIONS

The following Subject Matter Ineligibility Contentions incorporate by reference the Subject Matter Ineligibility Contentions set forth in Appendices 1–4. These Subject Matter Ineligibility Contentions are subject to revision and amendment pursuant to F.R.C.P. 26(e) and the Court's Docket Control Order, to the extent appropriate, in light of further investigation and discovery regarding the defenses below, the Court's construction of the Asserted Claims of the Asserted Patents, and/or the review and analysis of expert witnesses.

Whether an invention is eligible for patent protection under 35 U.S.C. § 101 is a “threshold test.” *See Bilski v. Kappos*, 561 U.S. 593, 602 (2010). Section 101 lists four broad categories of patent-eligible subject matter but is subject to “an important implicit exception” that “[l]aws of nature, natural phenomena, and abstract ideas,” which form the “basic tools of scientific and technological work,” are not eligible for patent protection. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014) (internal quotation marks omitted). “The ‘abstract ideas’ category embodies ‘the longstanding rule

that an idea of itself is not patentable.” *Id.* at 209 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (quoting *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498 (1874))).

Alice set forth a two-step inquiry. “First, we determine whether the *claims* at issue are directed to one of those patent-ineligible concepts.” *Id.* at 217 (emphasis added). In making this inquiry, the claims “must be considered as a whole.” *Alice*, 573 U.S. at 218 n.3 (quoting *Diamond v. Diehr*, 450 U.S. 175, 188 (1981)). In analyzing step one, courts consider “whether the claims in the patent focus on a specific means or method, or are instead directed to a result or effect that itself is the abstract idea and merely invokes generic process and machinery.” *Two-Way Media Ltd. v. Comcast Cable Commc’ns, LLC*, 874 F.3d 1329, 1337 (Fed. Cir. 2017); *see also Free Stream Media Corp. v. Alphonso Inc.*, 996 F.3d 1355, 1363 (Fed. Cir. 2021).

“[M]ental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.” *Gottschalk*, 409 U.S. at 67; *see also Cybersource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 99 USPQ2d 1690 (Fed. Cir. 2011) (claim “fails to recite patent-eligible subject matter because it is drawn to an unpatentable mental process—a subcategory of unpatentable abstract ideas”). For example, a patent that claims use of a mathematical formula for calculating updated values of alarm limits for alarms that monitor process variables (such as temperature) during a chemical process was directed to ineligible subject matter. *Parker v. Flook*, 437 U.S. 584, 594-95 (1978). The Supreme Court rejected the notion that the recitation of a practical application for the calculation could alone make the invention patentable, stating that any “competent draftsman could attach some form of post-solution activity to almost any mathematical formula.” *Id.* at 590.

If the claims recite an abstract idea, the second step requires a “search for an ‘inventive concept’—an element or combination of elements that is ‘sufficient to ensure that the patent in

practice amounts to significantly more than a patent upon the [ineligible concept] itself.” *Alice*, 573 U.S. at 218 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 73 (2016)). “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the claim is more than a drafting effort designed to monopolize the abstract idea.’” *Id.* at 221 (quoting *Mayo*, 566 U.S. at 78) (alterations omitted). The recited “additional features must be more than well-understood, routine, conventional activity.” *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 1335, 1339 (Fed. Cir. 2013) (internal quotations omitted).

Application of an abstract idea using “conventional and well understood techniques” does not “supply an inventive concept.” *BSG Tech. LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290-91 (Fed. Cir. 2018); *see also Baggage Airline Guest Servs., Inc. v. Roadie, Inc.*, 351 F. Supp. 3d 753, 761 (D. Del. 2019), *aff’d*, 2019 WL 5703890 (Fed. Cir. Nov. 5, 2019) (finding that “reciting generic computer functions and the use of generic computer elements to achieve a more efficient way of ‘coordinating and monitoring baggage delivery’” is not an inventive concept). A “critical difference” exists between “patenting a particular concrete solution to a problem” and “attempting to patent the abstract idea of a solution to the problem in general,” because the overbroad functional claiming of the latter “purport[s] to monopolize every potential solution to the problem.” *BSG*, 899 F.3d at 1290-91. Further, claims are subject matter ineligible if “[w]hat is claimed is simply a generic environment in which to carry out the abstract idea.” *Yu v. Apple Inc.*, 1 F.4th 1040, 1043 (Fed. Cir. 2021).

As required by the Local Rules, Defendant identifies each Asserted Claim of the ’284, ’683, ’682, and ’967 patents as being directed to the abstract ideas. The Asserted Claims of the ’682 patent are directed to the abstract idea of collecting, organizing, and analyzing data to evaluate a cooling system and make appropriate adjustments. The Asserted Claims of the ’284 and ’683

patents are similarly directed to the abstract idea of collecting and analyzing data to evaluate a cooling system and make appropriate adjustments. The Asserted Claims of the '967 patent are directed to the abstract idea of using multiple power supplies in the event of failure or anomalous condition of a power source to provide an uninterrupted, redundant, backup, and/or continuous power supply. There is nothing in any of the Asserted Claims to transform these abstract ideas into inventive concepts or patent eligible subject matter. *See* Appendices 1–4.

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Respectfully submitted,

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**ATTORNEYS FOR
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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served upon all counsel of record via email on May 7, 2025.

/s/: Janice. L. Ta

Janice L. Ta