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Paper 37
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GORDON * HOWARD ASSOCIATES, INC.,
Petitioner,

v.

LUNAREYE, INC.,
Patent Owner.

Case IPR2014-01213
Patent 6,484,035 B2

Before MICHAEL W. KIM, GEORGIANNA W. BRADEN, and J. JOHN LEE, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

INTRODUCTION

On July 29, 2014, Gordon * Howard Associates, Inc. ("GH") filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1–24 of U.S. Patent No. 6,484,035 B2 (Ex. 1002, "the '035 patent"). Patent Owner LunarEye, Inc. ("LunarEye") filed a Preliminary Response. Paper 7 ("Prelim. Resp."). An *inter partes* review of claims 1–24 was instituted on February 3, 2015. Paper 11 ("Inst. Dec."). After institution, LunarEye filed a Patent Owner Response (Paper 17, "PO Resp."), and GH filed a Petitioner Reply[1] (Paper 28, "Pet. Reply"). In addition, GH filed a Motion to Seal requesting that Exhibit 1028 be sealed.[2] Paper 30 ("Mot. Seal"). An oral hearing was held on September 15, 2015. Paper 35 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. As discussed below, GH has shown by a preponderance of the evidence that claims 1–24 of the '035 patent are unpatentable.

A. Related Proceedings

The '035 patent is at issue in a pending district court case involving the same parties in this proceeding, *Lunareye, Inc. v. Gordon Howard Associates, Inc.*, No. 9:13-cv-91 (E.D. Tex.). Pet. 1; Paper 4, 2. Additionally, the '035 patent is the subject of *Gordon * Howard Associates,*

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[1] GH filed both a confidential Petitioner Reply (Paper 29), and a redacted Petitioner Reply (Paper 28), in which confidential information is redacted. The redacted information was not relied on for this Decision. Thus, all citations to the Petitioner Reply refer to the redacted version.

[2] GH filed both confidential and redacted versions of the Motion to Seal (Paper 30 (redacted); Paper 31 (confidential)) and Exhibit 1028. All citations to the Motion refer to the redacted version.

Inc. v. LunarEye, Inc., Case IPR2014-00712 ("712 IPR"), in which a Final Written Decision was issued on September 28, 2015, determining that claim 3 of the '035 patent is unpatentable under 35 U.S.C. § 103(a). *See* 712 IPR, Paper 43. LunarEye filed a Notice of Appeal of that decision on November 24, 2015. 712 IPR, Paper 45.

B. The '035 Patent

The '035 patent relates to a "triggerable location-reporting apparatus," where the apparatus transmits its location information in response to a "trigger signal." Ex. 1002, Abstract. The Summary of the Invention states:

> In general, in one aspect, the invention features a triggerable location-reporting apparatus comprising a trigger signal, a GPS processor coupled to the trigger signal, a position signal carrying position information generated by the GPS processor in response to the trigger signal, a telemetry transmitter coupled to the position signal, and a telemetry transmit signal transmitted by the telemetry transmitter, the telemetry transmit signal carrying the position information.

Id. at 2:1–9. In addition, the apparatus may include a controller configured to switch on and off the power signals to the GPS processor and telemetry transmitter. *Id*. at 2:10–19. The specification indicates that this "power management" by the controller limits power drain. *Id*. at 6:23–40.

Further, the specification describes a "data selector" operating such that certain bits of location data from a GPS device are not included in the data signal transmitted by the apparatus—for example, "only the bits representing latitude, longitude, velocity and heading . . . are included in the data to transmit signal" while "the bits representing height and current time are discarded." *Id*. at 7:4–15; *see id*. at Figs. 6, 7. Additionally, the specification states that "it may be desirable to change the order that the

various portions of the information are transmitted." *Id*. at 7:15–17. Thus, in sum, the data selector selects the data to be transmitted and arranges it into the desired order. *Id*. at 7:18–20.

C. Challenged Claim

Claims 1–4, 10, and 17 are independent claims. Claim 3 is illustrative of the challenged claims:

> 3. A triggerable location-reporting apparatus comprising:
>
> a location-signal generating device configured to produce a location signal including location data when enabled;
>
> a data selecting device for selecting less than all of the location data to include in the location signal;
>
> a telemetry transmitter coupled to the data selecting device configured to transmit the location signal when enabled; and
>
> an enable controller configured to enable the location signal generating device and the telemetry transmitter when it receives a trigger signal and to disable the location-signal generating device and the telemetry transmitter after the telemetry transmitter transmits the location signal;
>
> wherein the data selecting device reorders the selected location data.

D. Instituted Ground of Unpatentability

This *inter partes* review was instituted on the following grounds of unpatentability (Inst. Dec. 27):

Claim(s)	Basis	Prior Art
1, 2	35 U.S.C. § 103(a)	Mohan,[3] Oncore,[4] and Roach[5]

[3] U.S. Patent No. 6,121,922, issued Sept. 19, 2000 (Ex. 1006).
[4] Motorola, *Oncore User's Guide*, *Revision 7.0*, May 1996 (Ex. 1007).
[5] U.S. Patent No. 5,526,401, issued June 11, 1996 (Ex. 1008).

Claim(s)	Basis	Prior Art
3–24	35 U.S.C. § 103(a)	Mohan and Lewis[6]
3, 21	35 U.S.C. § 103(a)	Mohan, Oncore, and Lewis

ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are construed according to their broadest reasonable interpretation in light of the specification. 37 C.F.R. § 42.100(b); *see In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015), *cert. granted, Cuozzo Speed Techs. LLC v. Lee*, 84 U.S.L.W. 3218 (U.S. 2016). Only those terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

In the Decision on Institution, certain claim terms were construed preliminarily as follows:

Claim Term	Claim Construction
location data	data generated by the location-signal generating device, which may include, but is not limited to, GPS data such as latitude, longitude, height, velocity, heading, and time
data selector / data selecting device	device capable of selecting location data to include in the location signal
reorders	arranges into the desired order for transmission

[6] U.S. Patent No. 5,587,715, issued Dec. 24, 1996 (Ex. 1009).

Inst. Dec. 7–9. During trial, the parties did not dispute the above construction of "location data," nor was any conflicting evidence presented. Thus, after considering the record anew, we maintain the same construction for this Decision, and we incorporate our previous analysis set forth in the Decision on Institution. *See id.* at 7. The parties, however, raised certain issues relating to the terms "data selector"/"data selecting device" and "reorders," which are addressed in more detail below.

1. Data Selector / Data Selecting Device

LunarEye argues that the "data selector" of claim 1, and the "data selecting device" of claims 3–24, must be further construed to exclude any device that is located physically inside of a GPS receiver. PO Resp. 20–26; *see* Ex. 2031 ¶ 15 (Declaration of Joseph C. McAlexander III). According to LunarEye, the specification of the '035 patent distinguishes between the claimed data selecting device and a GPS receiver, and a "Motorola® Oncore™ GPS receiver" in particular.[7] *Id*. GH disagrees the specification compels such a limitation. Pet. Reply 1–5.

The record evidence does not support LunarEye's position. LunarEye relies on the specification's descriptions of certain embodiments. For example, Figure 2 of the '035 patent is a block diagram depicting certain features of an embodiment of the claimed invention, including Global Positioning Satellite System Receiver 48 ("GPS Receiver 48") and Controller 36. Ex. 1002, Fig. 2, 5:49–6:8; *see* PO Resp. 20–21 & n.48. As an initial matter, LunarEye does not identify anything in Figure 2 or its

[7] We note that many of the challenged claims recite a "location-signal generating device," which is not limited necessarily to a GPS receiver, much less a particular brand or model of GPS receiver.

accompanying description requiring that GPS Receiver 48 and Controller 36 be physically distinct components. Even if there was such a requirement, however, "a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment." *Superguide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004). LunarEye's reliance on other figures and descriptions of embodiments in the specification is unpersuasive for the same reason. *See* PO Resp. 20–21 & n.48; *see also* Ex. 2031 ¶¶ 14–15 (LunarEye's proffered expert relying on descriptions of embodiments for opinion that data selecting device is external to GPS receiver). Merely describing a narrower embodiment does not constitute the clear disclaimer required to apply the limitation at issue to the claim. *See In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004).

In addition, LunarEye also contends the claim language itself indicates the recited GPS receiver (or location-signal generating device) and data selector are physically distinct components. PO Resp. 22. LunarEye asserts claims 1 and 2 recite that the GPS receiver produces "GPS data" first, and that the data selector operates on that output of the GPS receiver to produce "selected GPS data." *Id.* at 22–23. According to LunarEye, this claim language requires that the GPS receiver and data selector be "distinct," i.e., physically separate. *See id*. at 20–22. The claim language, however, does not support LunarEye's position. Although claims 1 and 2 recite the GPS receiver and data selector separately and recite distinct functions for each, nothing in those claims indicates these structures must be *physically* separated or precludes one being housed physically within the other,

particularly under their broadest reasonable interpretation. LunarEye does not present any compelling evidence indicating otherwise.

With respect to the "data selecting device" of claims 3–24, LunarEye contends those claims, and claim 3 in particular, specify that the location-signal generating device produces a location signal including location data *first*, and the recited data selecting device must be outside of the location-signal generating device because it operates on the *output* of the location-signal generating device, i.e., *after* the location signal is produced. *Id.* at 23–26. Again, the claim language does not compel a conclusion that these structures must be *physically* separated, however, and LunarEye does not identify any persuasive evidence compelling such an interpretation.

Further, claims 3–24 (as well as claim 1) are apparatus claims, not method claims, and recite a series of components with their functions rather than claiming steps of a process. Moreover, claim 3 recites that the location-signal generating device is configured to "produce a location signal including location data," and that a function of the data selecting device is "selecting less than all of the location data to *include in the location signal*" (emphasis added).[8] Thus, the claim does not, "as a matter of logic or grammar," mandate that the data selecting device act *after* the location-

[8] LunarEye also appears to assert that the location signal recited with respect to the data selecting device actually is *not* the same location signal produced by the location-signal generating device, but rather a *second* location signal required by the claim. *See* PO Resp. 24 (discussing a district court order purportedly describing such an interpretation). This argument is not supported by the claim language or the specification—claim 3 only recites one "location signal." We rejected the same argument in the 712 IPR, where LunarEye provided more extensive explanation of this argument, and we adopt the same analysis here. *See* 712 IPR, Paper 43, 8–9.

signal generating device produces the location signal. *See Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1342–43 (Fed. Cir. 2001). To the contrary, the language of claim 3 indicates the data selecting device may participate *during* the production of the location signal by the location-signal generating device, because the data selecting device selects location data to include in "the" location signal (i.e., the same "location signal including location data" as that produced by the location-signal generating device, from which it derives its antecedent basis). *See* Pet. Reply 4. Thus, the claim language does not preclude the data selecting device from being located within—or, indeed, being a part of—the location-signal generating device. LunarEye does not identify any disclosure in the specification indicating that it is important for the data selecting device to act after the location-signal generating device produces the location signal, or disclaiming any particular order in which those components may operate. *See Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1371 (Fed. Cir. 2003).

Based on the complete record, the broadest reasonable interpretation of the claim terms "data selector" and "data selecting device" is "device capable of selecting location data to include in a location signal." Furthermore, the term does not preclude the data selector/data selecting device from being located physically within the GPS receiver or location-signal generating device.

2. Reorders / Reordering

LunarEye argues the preliminary construction set forth in the Decision on Institution—"arranges the selected location data into the desired order for transmission"—is incorrect because it does not require the selected location data to be in a preexisting order. *See* PO Resp. at 27–31 (arguing the

asserted prior art references fail to teach the "reorders" limitation because they do not disclose a preexisting order). According to LunarEye, "the 'reordering' as call[ed] for in the claims of the '035 patent requires ordered location data in a location signal before it is processed by the data selector/ data selecting device." PO Resp. 30.

GH contends the preliminary construction is correct,[9] and that the term "reorders" does not require the data to be in an initial order before reordering. Pet. Reply 6–8. Primarily, GH relies on a claim differentiation argument, noting that claim 21 recites, "wherein the data selecting device reorders the selected location data comprises rearranging the location data." *Id.* at 7–8. Relying on Mr. McAlexander's testimony, GH contends "rearranging" should be understood as "changing the position" whereas "reordering" should be construed as "arranges into a desired order for transmission." *Id.* (quoting Ex. 1023, 126:5–127:3).

Our preliminary construction of "reorders" in the Decision on Institution (Inst. Dec. 8–9), as "arranges the selected location data into the desired order for transmission," was based primarily on the '035 patent specification, which describes the reordering function:

> An example of the data selector function is illustrated in FIGS. 6 and 7. The Motorola® GT Plus OncoreTM GPS family of chips produces an digital output signal 86 containing bits representing the latitude, longitude, height, velocity, and heading of the apparatus 12 and the current time, as shown in FIG. 6. . . . Preferably, only the bits representing latitude, longitude, velocity and heading 88 are included in the data to

[9] In its Petition, GH proposed that this term be construed as "alters or altering the format of a signal that comprises location data, such as by rearranging the location date or omitting a portion of the location data." Pet. 27.

> transmit signal 56, as shown in FIG. 7. . . . Further, it may be desirable to change the order that the various portions of the information are transmitted. For example, it may be desirable to send the heading portion first. *The data selector selects the data to be transmitted and arranges it into the desired order*.

Ex. 1002, 7:4–20 (emphasis added). We concluded, "the specification explains that reordering the selected location data encompasses arranging the data received from the location-signal generating device (e.g., a GPS device) into the order desired for transmission." Inst. Dec. 9.

Under the broadest reasonable interpretation standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the patent's specification. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). The ordinary meaning of the term "reorders"—as contrasted with "orders"—indicates a change in order. The specification supports this understanding of the term, stating that "it may be desirable to *change the order* that the various portions of the information are transmitted." Ex. 1002, 7:15–17 (emphasis added).

We acknowledge GH's claim differentiation argument but decline to adopt the broader interpretation advanced by GH. The Federal Circuit has indicated that claim differentiation cannot overcome a construction compelled by either the claim language or the specification. *Marine Polymer Techs., Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1359 (Fed. Cir. 2012); *Mycogen Plant Sci., Inc. v. Monsanto Co.*, 243 F.3d 1316, 1329 (Fed. Cir. 2001). Also, we note that GH does not identify any *intrinsic* evidence supporting the distinction it draws between reordering and rearranging, relying instead on the extrinsic testimony of LunarEye's expert. Pet. Reply

7–8. Consequently, GH's evidence is not persuasive in light of the plain meaning of the term "reorders" and the specification's description of reordering as changing order.

Therefore, based on the parties' arguments and evidence developed since the Decision on Institution, we now determine the broadest reasonable interpretation of "reorders" is "changes the order into the desired order for transmission," such as the order of selected GPS or location data.[10]

B. Alleged Unpatentability Under § 103

GH contends claims 1 and 2 of the '035 patent are obvious in light of the teachings of Mohan, Oncore, and Roach; claims 3–24 are obvious in light of the teachings of Mohan and Lewis; and claims 3 and 21 are obvious in light of the teachings of Mohan, Oncore, and Lewis. Pet. 11–22. Based on the complete record, GH has shown by a preponderance of the evidence that claims 1–24 are unpatentable for the reasons explained below.

1. Mohan

Mohan discloses a tracking system using a miniaturized geographic position determination and communications module. Ex. 1006, Abstract. The tracking system includes "GPS receiver 520," which produces a signal comprising "[g]eographic position data such as latitude, longitude and altitude." *Id.* at 3:5–15, Fig. 1. This geographic position data is then transmitted over a network via "communications transmitter/receiver 540." *Id*. Additionally, Mohan teaches that position information may be

[10] On this record, it is unnecessary to resolve whether this claim term requires in every instance that the selected location data be placed first in an initial order before being reordered into a different order, because the asserted prior art sufficiently teaches changing the order from an initial order to a different order, as explained below.

transmitted in response to activation of a panic function or a request from a remote location. *Id.* at 2:15–19. The system of Mohan also includes a power management subsystem:

> *Upon activation, the system enters a full power mode state* as shown at node 206, then enters an "acquire GPS position" state as shown at node 202. *When a positioning signal is received*, as indicated by symbol 203, the system remains in this state, as indicated by loop line 205, until a geographic fix has been determined. At this point, the system enters a ready state and a communications link is opened, as shown at node 208. The system remains in this state until a link has been established, at which point a ready condition is entered, and *identification and position information are transmitted* according to node 210, as shown by symbol 211.

Id. at 5:10–20 (emphases added); *see id*. at Fig. 3. After the system reports the position information, the communications link is closed and the system enters a "low-power mode." *Id.* at 5:44–48. Mohan's claims recite "a controller operative to . . . cause the global positioning satellite receiver to receive and decode a signal . . . containing information relating to the geographic position of the module, cause the communications transceiver to communicate the information to a remote location, and disable the global positioning satellite receiver and communications transceiver when not in use." *Id.* at 7:29–39.

2. Oncore

The Oncore reference is a user's guide to Motorola's Oncore GPS receiver products.[11] Ex. 1007, 1.1. Oncore discloses that GPS signals from GPS satellites are routed to a "position processor (microprocessor [MPU])

[11] GH asserts Oncore is a printed publication that was publicly available as early as May 1996, relying on Oncore and the Declaration of Art Sepin (Ex. 1011). LunarEye does not dispute that Oncore is applicable prior art.

section." *Id*. at 3.2. The MPU decodes and processes satellite data and measurements used to compute position and velocity. *Id*. According to Oncore, the Motorola GPS receiver transmits autonomous position, velocity, heading, satellite tracking status, and time information in "three different, user selectable I/O protocols." *Id*. at 1.1; *see id*. at 5.1–5.2.

Oncore provides further information regarding each available I/O protocol. One of them is the "NMEA-0183 standard format," which includes several "NMEA output messages." *Id*. at 5.7. A user can enable or disable each output message independently. *Id*. Thus, more than one output message can be enabled and transmitted. *See also id*. at 5.8 (discussing "the case where more than one output message is scheduled during the same one second interval"). One such message is the "GPGGA" message, which includes certain data fields in the following order: UTC of position fix (i.e., time), latitude, longitude, GPS quality indicator, number of satellites being used, HDOP, antenna height, geoidal separation, age of differential data, and differential reference station ID. *Id*. at 6.149. Another such message is the "GPGLL" message, which includes only latitude, longitude, and UTC of position fix (i.e., time), in that order. *Id.* at 6.153. The GPGLL message does not include several of the data fields included in the GPGGA message, such as antenna height, and includes time in a different order relative to latitude and longitude. *Compare id.* at 6.153, *with id*. at 6.149.

3. Roach

Roach is directed to a "data message system" operating on a cellular mobile radiotelephone (CMR) system. Ex. 1008, 9:2–6, 9:22–30. A "typical" and "conventional" CMR system is described, including "mobile switching center (MSC) 24" that communicates with "cell 12," which

comprises a particular geographic radio service area wherein cellular devices communicate with the system. *Id.* at 9:31–54. The patent further discloses "cellular communications device 34" transmitting "selected data" to MSC 24, which receives the data message via "cellular network control channel 38." *Id.* at 9:55–10:12. Control channel 38 includes a forward control channel and a "reverse control channel (RECC)." *Id.* at 10:12–16. Cellular device 34 can use the reverse control channel to communicate with the network and, ultimately, MSC 24. *Id.* at 10:18–30.

The data messages disclosed in Roach are formatted as an identification signal, which is normally transmitted by a cellular device to identify itself to the CMR system when it first connects to the system. *Id.* at 6:40–47. This format includes a mobile telephone number and an "electronic serial number (ESN)." *Id.* at 6:47–49. The selected data within the data message is transmitted in the data field normally representing the ESN. *Id.* at 6:49–53. The mobile telephone number, also known as a "Mobile Identification Number (MIN)" (*id.* at 12:57–60), is used in the process of registering a cellular device with the CMR network. *Id.* at 13:30–39. The data message system of Roach can adapt the identification signal format to substitute data relating to a data message into the data field normally reserved for the MIN. *Id.* at 18:16–26.

4. Lewis

Lewis is directed to an apparatus and method of determining accurately the position of an object. Ex. 1009, Abstract. The apparatus includes "vehicle tracking unit 14," which comprises "ground GPS receiver 48 for receiving and processing the GPS signals received from the satellites 12," and formats and transmits signals via "modem 74" and "cellular

transceiver 52." Ex. 1009, 9:19–25, 10:53–56. Receiver 48 may be "adapted to receive and process GPS signals" as well as producing outputs in the NMEA-0183 standard format. *Id.* at 9:25–36. For example, Lewis describes formatting output messages as a "$GPGGA" message that includes, for example, fields for time, latitude, longitude, number of participating satellites, a data quality indicator, horizontal or position dilution, antenna altitude, ellipsoid separation between satellites, etc. *Id.* at 9:36–52. Lewis also describes output messages that include only "vehicle location, speed and direction of movement" (*id*. at 10:4–8), or "a start-of-header preamble, a start-of-text command, the message text in the form of the vehicle location and time data, and an end-of-text suffix" (*id*. at 11:45–56). *See also id.* at 9:52–58 (describing a "$GPVTG" message that includes simply vehicle direction and speed).

5. Claims 1 and 2: Mohan, Oncore, and Roach

GH contends the combination of Mohan, Oncore, and Roach renders claims 1 and 2 unpatentable as obvious. Pet. 11–16. In particular, GH asserts that Mohan teaches a GPS receiver that receives a position signal (i.e., GPS signals) and communicates geographic position information (i.e., GPS data) when activated. *Id.* at 30–31 (citing Ex. 1006, 2:15–19, 5:10–15). Also, GH submits that Oncore also teaches the recited GPS receiver by disclosing the Oncore GPS receiver that processes satellite data (i.e., GPS signals) and outputs NMEA messages containing GPS data. *Id.* at 33–34 (citing Ex. 1007, 3.2, 5.7).

According to GH, Mohan also teaches the "trigger signal" and "enable controller" limitations of claim 1, as well as the similar "trigger" and "enabling"/"disabling" limitations of claim 2. *See* Pet. 50–56. Specifically,

GH relies on Mohan's discussion of its power management system, in which the system enters a full power mode to receive, process, and transmit position information when activated by, for example, a request from a remote location. *See id.* (citing Ex. 1006, 2:15–19, 4:43–5:49, Figs. 1, 3).

With respect to the recited "cellular network transmitter" limitations of claims 1 and 2, GH argues Roach provides the necessary teachings in its disclosure of cellular devices operating on a CMR network. *See* Pet. 43–48. For example, GH identifies Roach's description of the use of MIN and ESN data fields to transmit data, and its disclosure of reverse control channels, as teaching the recited formatting and transmitting functions of the cellular network transmitter of claims 1 and 2. *See id.* (citing Ex. 1008, 9:3–7, 9:23–31, 10:7–30, 13:30–39, 17:66–18:5).

LunarEye does not dispute that Mohan, Oncore, and Roach teach the above limitations of claims 1 and 2. Based on evidence presented, we find that the record supports GH's contention that the combination of Mohan, Oncore, and Roach teaches each of these limitations, as set forth in GH's analysis described above.

For the recited "data selector" and related limitations of claim 1, and the corresponding limitations of claim 2, GH relies on the teachings of Oncore. *See* Pet. 37–38. Considering the full record after trial, we conclude GH has shown sufficiently that Oncore's teachings would have led a person of ordinary skill to a device, like the Oncore MPU, capable of selecting a subset of GPS location data to include in an output signal in the form of an NMEA output message—for example, including latitude, longitude, and time for a "GPGLL" message, but not antenna height or other fields used in a "GPGGA" message. *Id.*; *see* Ex. 1010 ¶¶ 84–86; Ex. 1007, 5.7–5.8, 6.149,

6.153. Furthermore, we conclude the record as a whole indicates a person of ordinary skill would have found it obvious in light of Oncore to change the order of the data fields for one NMEA message to construct a different NMEA message—for example, changing the order of time, then latitude, then longitude, such as in a GPGGA message, to the different order of latitude, then longitude, then time, such as in a GPGLL message. Pet. 56–57; Ex. 1010 ¶¶ 87–88; Ex. 1007, 5.7–5.8, 6.149, 6.153. Thus, GH has shown sufficiently that Oncore teaches the data selector and related limitations of claim 1, and the corresponding limitations of claim 2.

LunarEye disputes GH's contentions regarding Oncore, but its arguments are unpersuasive. First, LunarEye argues GH relies improperly on functions performed by components of Oncore's GPS receiver because a person of ordinary skill would not consider those disclosures applicable to the recited data selector, which LunarEye contends must be a physically separate device. *See* PO Resp. 20–26. As discussed earlier, however, the premise of LunarEye's argument—that a data selector must be physically distinct from the GPS receiver—is not commensurate with the full scope of the claims, which include no such limitation when given their broadest reasonable interpretation.

Similarly, LunarEye's assertion that the Oncore GPS receiver cannot be the recited data selector, because it does not receive or further process its own output signal, also is unpersuasive. *See id.* at 22–26. Claim 1 only requires that the GPS receiver produce GPS *data*, and that the data selector select less than all of that data to produce selected GPS data; claim 2 is similar. It is undisputed that Oncore's GPS receiver includes components that receive signals from GPS satellites that are then processed to yield GPS

data. *See* Ex. 1007, 3.1–3.2; Tr. 26:20–27:6. Oncore discloses that the data is then "routed to the position processor [MPU]," and ultimately output to a transmitter as an NMEA message. Ex. 1007, 3.2, 5.7–5.8; *see* Tr. 27:8–12. LunarEye contends that the processing and routing of the GPS data to the MPU does not constitute "producing GPS data" because that data is not made directly available "to the outside world." Tr. 27:13–22. The only evidence LunarEye presents to support such a narrow interpretation of claims 1 and 2, in fact, pertains to *other* claims that instead recite "produc[ing] a *location signal*" (emphasis added). *See* PO Resp. 23 (citing Ex. 2006, 36:22–37:21 (testimony regarding claim 3)); Tr. 27:23–29:9[12] (citing Ex. 1002, 7:6 (describing a GPS chip that "produces an [sic] digital output signal 86")). At bottom, LunarEye has not provided a persuasive basis to find that processing satellite signals to yield GPS data and route it to a processor, as disclosed in Oncore, does not constitute producing GPS data within the meaning of claims 1 and 2.

Lastly, LunarEye contends Oncore does not teach reordering the selected GPS data as required by claims 1 and 2. PO Resp. 26–33. According to LunarEye, Oncore does not disclose any initial order of the location data received by the GPS receiver. *Id*. LunarEye argues that when Oncore discusses generating multiple different NMEA messages, each message is constructed separately from the original, unordered data; thus, the data is *ordered* for each output message in the first instance, rather than *reordered*. PO Resp. 32–33; Tr. 30:14–31:2. In an obviousness analysis,

[12] At the oral hearing, LunarEye's counsel acknowledged that it is not "readily disputable" that processing satellite data to yield GPS data to provide it to Oncore's MPU would be "produc[ing] GPS data in some sense." Tr. 28:18–29:9.

however, we consider not only the express disclosures of the asserted prior art references, but also the "inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Here, the record indicates that a person of ordinary skill would have had at least a bachelor's degree in electrical or computer engineering and familiarity with GPS and communications technology, such as that gained from five years of professional experience in the design and implementation of GPS technology. *See* Ex. 1010 ¶¶ 37–40 (Dr. James M. Janky's testimony on level of ordinary skill); Ex. 2031 ¶¶ 8–9 (Mr. McAlexander's testimony adopting Dr. Janky's description of the level of ordinary skill). Considering the level of ordinary skill and the evidence of record, we find that Oncore would have taught or suggested to an ordinary artisan a device that changes the order of selected location data from one order (e.g., an NMEA message) to another order (e.g., a different NMEA message). *See* Ex. 1023, 94:17–96:6 (LunarEye's proffered expert testifying that selecting less than all the data and reordering into the desired arrangement was "already known" and within the ability of a person of ordinary skill).

In conclusion, considering all of the parties' arguments and the full record, GH has shown sufficiently that the combination of Mohan, Oncore, and Roach teaches or suggests each limitation of claims 1 and 2.

6. Claims 3–24: Mohan and Lewis

GH contends the combination of Mohan and Lewis renders claims 3–24 unpatentable as obvious. Pet. 16–19. In particular, GH explains that Lewis teaches the recited "location-signal generating device" limitations of independent claims 3, 4, 10, and 17 in its discussion of a vehicle tracking

unit with a GPS receiver that can output signals in the form of NMEA sentences containing various data fields, such as latitude, longitude, vehicle speed, and vehicle direction (heading). *Id.* at 35–36 (citing Ex. 1009, 9:25–58). GH also asserts that those disclosures of Lewis further teach the related limitations recited in dependent claims 8, 9, 13, and 18. *Id.* at 36–37.

According to GH, Lewis also teaches the "telemetry transmitter" limitations of claims 3, 4, 10, and 17 in its discussion of the vehicle tracking unit's cellular transceiver, which transmits the NMEA messages via a cellular communications system. *Id.* at 48–49 (citing Ex. 1009, 9:20–58, 11:20–24, Fig. 2A).

With respect to the recited "enable controller" and its related limitations, GH identifies Mohan as teaching the recited features. *Id.* at 51–55. Specifically, GH relies on Mohan's disclosures regarding its power management system, discussed above, which controls whether the GPS receiver and the communications transceiver are active or disabled (in a low-power state) in response to a trigger signal. *Id.* at 51–52 (citing Ex. 1006, 2:15–19, 3:16–20, 4:43–5:49, Figs. 1, 3). Based on this evidence, GH argues applying Mohan's power management scheme to the vehicle tracking unit of Lewis teaches the "enable controller" and related limitations of claims 3, 4, 10, and 17, as well as the related limitations of claims 5 and 11. *Id.* at 53–55.

LunarEye does not dispute that Mohan and Lewis teach the above limitations of claims 3–24. Based on evidence presented, we find that the record supports GH's contention that Mohan and Lewis teach each of these limitations, as set forth in GH's analysis described above.

GH further contends that Lewis teaches the recited "data selecting device" and related limitations of claims 3, 4, 10, and 17, as well as related limitations recited in their dependent claims. Pet. 39–42. According to GH, the fact that the GPS receiver disclosed in Lewis can be configured to output multiple messages with different data fields, as discussed earlier (and as similar to Oncore), indicates that less than all of the available GPS data is selected and that some of the data may be discarded. *Id.* (citing Ex. 1009, 9:25–58, 11:45–55). Based on these teachings, GH argues Lewis teaches all of the various permutations of selected and/or discarded data fields recited in the challenged claims. *Id*. Further, GH identifies "modem 74" of Lewis as teaching the "data selecting device" performing the selecting and discarding, noting that Lewis indicates modem 74 is involved in "formatting" the signals output from the GPS receiver that are ultimately transmitted by the vehicle tracking unit. *Id.* at 39 (citing Ex. 1009, 10:53–56). In addition, based on the same teachings of Lewis regarding various possible output messages, GH argues Lewis teaches reordering (and rearranging) of the GPS/location data because the disclosed messages feature data fields in different orders. *Id.* at 58–59.

LunarEye disputes that Lewis teaches a data selecting device because, according to LunarEye, modem 74 of Lewis does not select or reorder data and, instead, merely performs other formatting functions such as modulation and demodulation of the output signal. PO Resp. 33–44. According to LunarEye, the NMEA messages described in Lewis are constructed by the GPS receiver, and the substance of those messages are unaltered by modem 74, which is merely a "pass-through" device. *Id*.

Based on the full record after trial, we find that the evidence presented supports GH's position and that Lewis teaches the data selecting device recited in the challenged claims, including the recited selection/discarding functions and reordering/rearranging functions, as set forth in GH's analysis discussed above. LunarEye's arguments to the contrary are unpersuasive because they focus unduly on whether modem 74 in isolation performs the functions of the recited data selecting device. "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference . . . ." *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). "Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *Id.* Thus, whether modem 74 of Lewis in isolation itself satisfies completely the data selecting device limitations of the challenged claims is not the relevant inquiry.

Based on the identified teachings of Lewis as a whole and the level of skill possessed by ordinary artisans, we find that the record supports GH's position that Lewis teaches or suggests to a person of ordinary skill a device capable of selecting location data to include in the location signal (i.e., a "data selecting device," as properly construed), and which is capable of changing the order (i.e., "reordering") of the selected data into the desired order for transmission.[13] As noted earlier, we consider not only the express disclosures of the asserted prior art references, but also the "inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*,

[13] Indeed, we note that LunarEye admits that the GPS receiver of Lewis includes components that can construct the variety of NMEA and other output messages disclosed in Lewis. *See* PO Resp. 34–36, 38–39.

550 U.S. at 418. "A person of ordinary skill is also a person of ordinary creativity, not an automaton." *Id.* at 421. Here, the evidence presented indicates these limitations would have been within the level of skill and creativity of ordinary artisans. *See* Ex. 1023, 94:17–96:6 (LunarEye's proffered expert testifying that selecting less than all the data and reordering into the desired arrangement was "already known" and within the ability of a person of ordinary skill).

In conclusion, considering all of the parties' arguments and the full record, GH has shown sufficiently that the combination of Mohan and Lewis teaches or suggests each limitation of claims 3–24.

7. Claims 3 and 21: Mohan, Oncore, and Lewis

GH contends the combination of Mohan, Oncore, and Lewis renders claims 3 and 21 unpatentable as obvious. Pet. 19–22. Its arguments are substantially similar to its arguments discussed above regarding the combination of Mohan and Lewis. *See id*. GH further argues that Oncore teaches the limitations relating to a GPS receiver (i.e., a location-signal generating device), the data selecting device limitations, and the reordering limitations, based on the same teachings it relied on for its asserted combination of Mohan, Oncore, and Roach. *See id.* at 33–35, 37–39, 42–43, 56–58, 60. Similarly, LunarEye relies on the same arguments against Oncore that it advanced for the previous asserted ground including Oncore. PO Resp. 45. For essentially the same reasons discussed above with respect to the previous two grounds of unpatentability, we find that the full record after trial supports GH's contention that the combination of Mohan, Oncore, and Lewis teaches or suggests each limitation of claims 3 and 21.

8. Reasons to Combine

GH asserts that a person of ordinary skill would have been motivated to combine Mohan, Oncore, and Roach. Pet. 12–16. For example, GH argues that both Mohan and Oncore are directed to GPS receiver technology, and that combining them would have involved a simple substitution that would achieve predictable results. *Id.* at 12. GH also contends that one of ordinary skill in the art would have been motivated by Oncore's discussion of the advantages of its GPS receiver technology, and that applying that technology in combination with Mohan would have amounted to nothing more than the use of a prior art element for its established function to obtain its stated benefits. *Id.* at 12–13 (citing Ex. 1007, 1.1). Likewise, GH asserts that combining Roach with Mohan would have involved a simple substitution with predictable results, which would have amounted to the use of Roach's prior art cellular communications system for its established function to achieve its known benefits. *Id.* at 13–15 (citing Ex. 1008, 9:6–30). In addition to the prior art references, GH also relies on the Declaration of Dr. Janky, whose testimony supports GH's contentions. Ex. 1010 ¶¶ 96–102. We have considered Dr. Janky's testimony, including his underlying analysis and reasoning, and find it credible. Based on all of the evidence presented, including Dr. Janky's testimony, GH has articulated sufficient reasoning with rational underpinning to support the conclusion that one of ordinary skill would have had reason to combine the teachings of Mohan, Oncore, and Roach in the manner advanced by GH. *See KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

With respect to its asserted combination of Mohan and Lewis, GH contends a person of ordinary skill would have been motivated to apply

Mohan's teachings regarding its power management system to the vehicle tracking system of Lewis, because it would yield the predictable results of preserving and conserving power, and it would have been nothing more than a predictable use of Mohan's prior art technology according to its established functions. Pet. 18–19. GH notes that both Mohan and Lewis are directed to GPS systems, and asserts that ordinary artisans would have recognized that Mohan's power management system would improve the GPS technology of Lewis in the same way. *Id*. In addition to the disclosures of Mohan and Lewis, GH also relies on the testimony of Dr. Janky, which we find credible and which supports GH's position. *See* Ex. 1010 ¶¶ 134–35. Based on the evidence of record, including Dr. Janky's testimony, GH has articulated sufficient reasoning with rational underpinning to support the conclusion that one of ordinary skill would have had reason to combine the teachings of Mohan and Lewis in the manner advanced by GH. *See KSR*, 550 U.S. at 418.

Finally, with respect to its asserted combination of Mohan, Oncore, and Lewis, GH asserts that applying Oncore's GPS receiver technology to the GPS system of Lewis would have been a simple substitution yielding predictable results; that a person of ordinary skill would have recognized the benefits associated with Oncore's GPS receiver technology, as disclosed in Oncore; and that the combination would have amounted to simply using Oncore's prior art technology for its established function to obtain its stated benefits. Pet. 20–21. GH also contends applying Mohan's power management technology to Lewis also would have amounted to the use of prior art technology for its intended purpose to obtain its known benefits. *Id.* at 21. Dr. Janky's credible testimony on these issues supports GH's

contentions. *See* Ex. 1010 ¶¶ 160–63. Based on the evidence presented, including Dr. Janky's testimony, GH has articulated sufficient reasoning with rational underpinning to support the conclusion that one of ordinary skill would have had reason to combine the teachings of Mohan, Oncore, and Lewis in the manner advanced by GH. *See KSR*, 550 U.S. at 418.

We have considered LunarEye's counterarguments but conclude they are unpersuasive. LunarEye argues that the asserted prior art references teach away from the combinations advanced by GH. PO Resp. 45–57. Specifically, LunarEye contends Mohan states that a device constructed according to its teachings should conform to certain size constraints to achieve adequate miniaturization. *Id.* at 48–52. The GPS device described in Oncore[14] are too large and are, thus, incompatible with Mohan, according to LunarEye. *Id*. This argument is unpersuasive, however, because none of the claims of the '035 patent require miniaturization, nor do they include any limitations restricting the size of the claimed apparatus or any recited component device. LunarEye does not identify any portion of Mohan that criticizes, discredits, or otherwise discourages combining Mohan and Oncore in the manner advanced by GH. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Merely describing the benefits of a miniaturized GPS device does not teach away from non-miniaturized devices. *See id.*; *In re Gurley*, 27 F.3d 551, 554 (Fed. Cir. 1994). Moreover, "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference." *Keller*, 642

[14] LunarEye does not argue that the GPS device of Lewis, or the communications devices of Roach, are incompatible with Mohan's purported size restrictions.

F.2d at 425. Thus, whether the Oncore GPS receiver is too large to be incorporated physically into the Mohan GPS device is inapposite, because the challenged claims do not recite any limitations on size.

Next, LunarEye argues Oncore and Lewis teach away from the invention of the '035 patent because they each teach the use of NMEA messages compliant with the NMEA standard. PO Resp. at 53–54. According to LunarEye, the NMEA standard is incompatible with the invention of the '035 patent because "the teachings of the '035 patent are directed to non-standard, proprietary data communications." *Id.* LunarEye's argument is unpersuasive, however, because the challenged claims do not recite any requirement of "non-standard, proprietary data communications." LunarEye does not identify sufficient support for such a narrow reading of the claim, and LunarEye fails to explain persuasively why such a requirement should be read into the claims. *See Am. Acad. of Sci.*, 367 F.3d at 1369 (describing the benefits of an embodiment is insufficient to import limitations from that embodiment into the claims).

The final teaching away argument presented by LunarEye fails for similar reasons. LunarEye asserts that Oncore teaches GPS receivers with antennae that are too large and consume too much power for the GPS devices disclosed in Mohan. PO Resp. 55–57. The challenged claims, however, do not include any limitations on antenna size, nor do they include any limitations reciting particular levels of antenna power consumption.[15]

[15] Although the '035 patent discusses the importance of managing power consumption, the specification describes the use of a controller to manage power, not limiting the claimed invention to using only antennae with particular power consumption restrictions. *See*, *e.g.*, Ex. 1002, 6:23–40.

In sum, LunarEye's allegations of teaching away are not supported by the record. We also disagree with LunarEye's assertion that GH's positions regarding reasons to combine the asserted prior art references are conclusory and meritless. *See* PO Resp. 57–59. To the contrary, they are supported by a preponderance of the record evidence.

CONCLUSION

Based on the evidence and arguments, GH has demonstrated by a preponderance of the evidence that claims 1 and 2 of the '035 patent are obvious in light of Mohan, Oncore, and Roach; claims 3–24 are obvious in light of Mohan and Lewis; and claims 3 and 21 are obvious in light of Mohan, Oncore, and Lewis.

MOTION TO SEAL

GH moves to seal Exhibit 1028. Mot. Seal. 2. As this is the Final Written Decision, we consider GH's Motion to Seal as a motion to expunge Exhibit 1028 from the record pursuant to 37 C.F.R. § 42.56. Exhibit 1028 was not relied on for this Decision. Consequently, GH's motion is *granted*, and Exhibit 1028 will be expunged.

ORDER

Accordingly, it is:

ORDERED that claims 1–24 of U.S. Patent No. 6,484,035 B2 are held unpatentable under 35 U.S.C. § 103; and

FURTHER ORDERED that Exhibit 1028 is expunged from the record.

This is a final written decision. Parties to the proceeding seeking judicial review of this Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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