



Email: aarono@andruslaw.com

August 28, 2025

VIA EMAIL
CONFIDENTIAL RULE 408 SETTLEMENT COMMUNICATION

Randy J. Pritzker
Michael Albert
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210
rpritzker@wolfgreenfield.com
malbert@wolfgreenfield.com

Re: Oxford Instruments Infringement of Maybell's Intellectual Property Rights

Dear Mr. Pritzker and Mr. Albert,

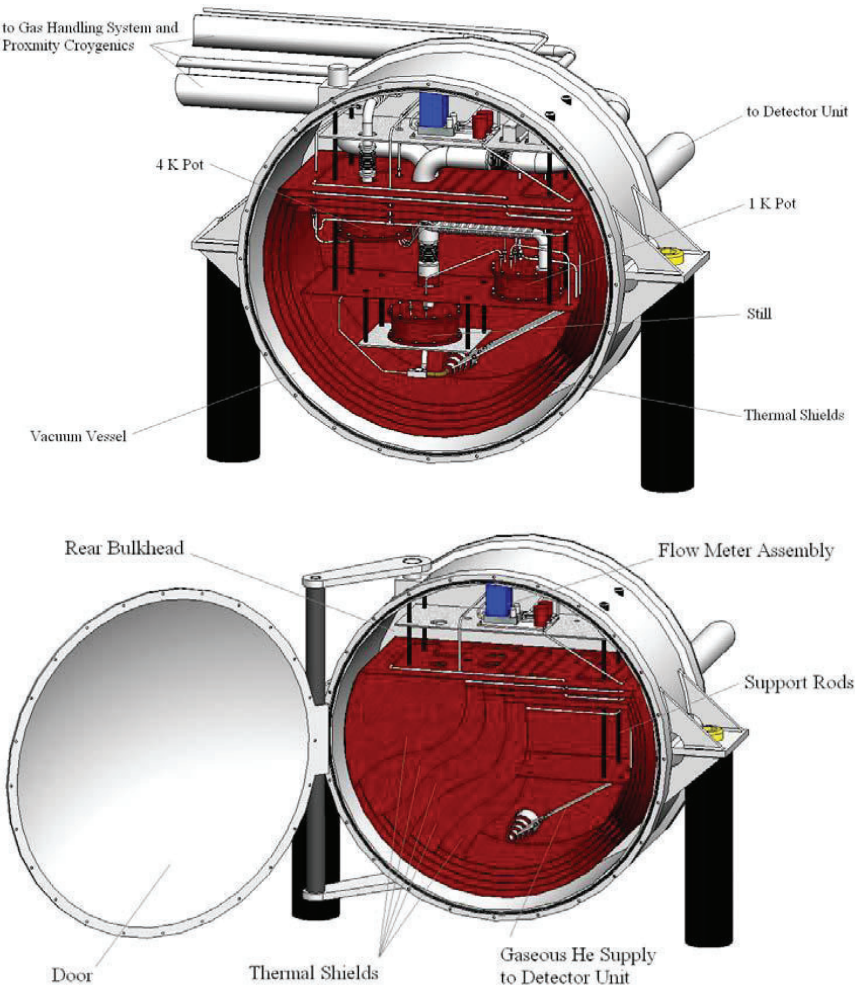
We are writing in response to your letter sent July 29, 2025, on behalf of Maybell Quantum Industries, Inc. ("Maybell"). As previously mentioned, Oxford Instruments takes issues of intellectual property seriously and has conducted a thorough review of U.S. Patent No. 12,313,320 (the "'320 patent"), its file history, uncited prior art references and the allegation of Maybell's complaint filed July 29, 2025, in the District of Delaware. Oxford Instruments denies that it infringes any valid claim of the '320 patent, and it believes the asserted claims are either anticipated by or obvious over several uncited prior art references. Accordingly, Oxford Instruments proposes to resolve this dispute through an agreement where Maybell covenants not to sue Oxford Instruments under the '320 patent or any patent related to the '320 patent, and Oxford Instruments agrees not to contest the validity of claims of the '320 patent or any patent related to the '320 patent.

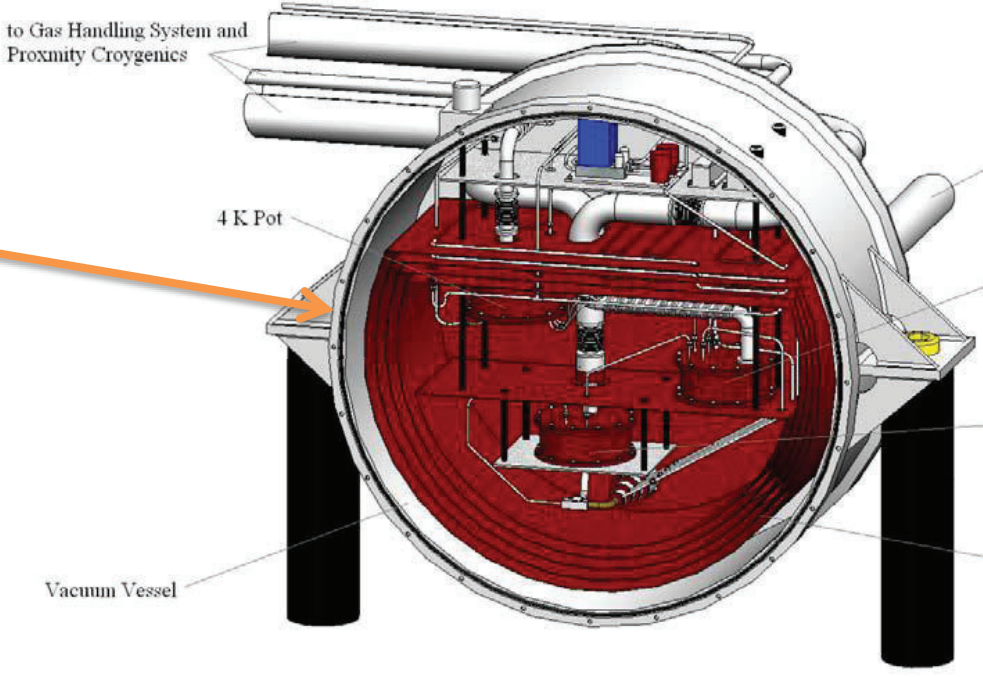
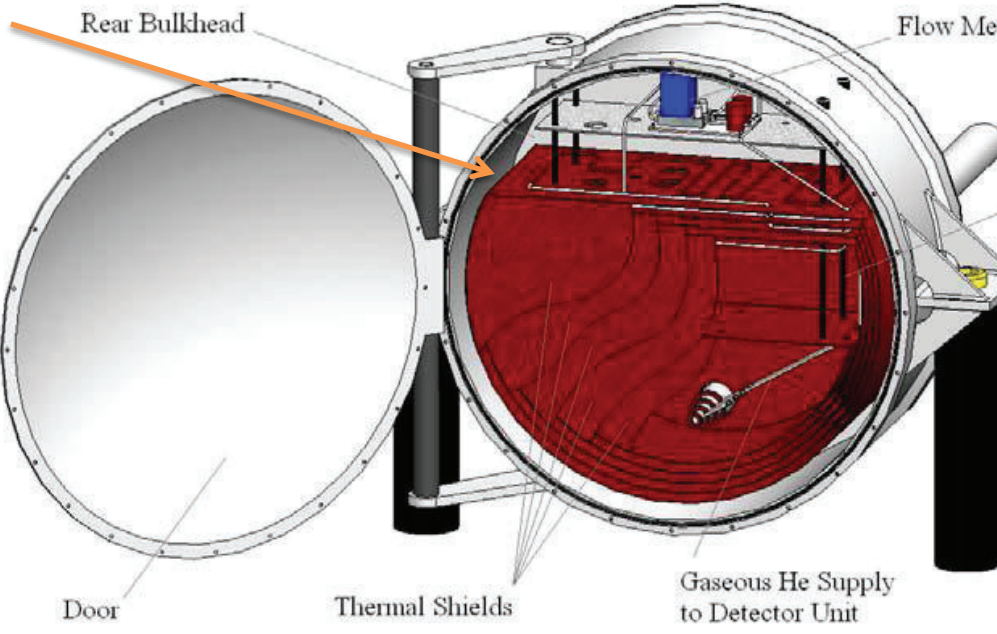
Initially, it is important to recognize Maybell's representations regarding the claimed subject matter of the '320 patent. In an article dated April 22, 2024, the inventor of the '320 patent and CEO of Maybell is quoted as admitting:

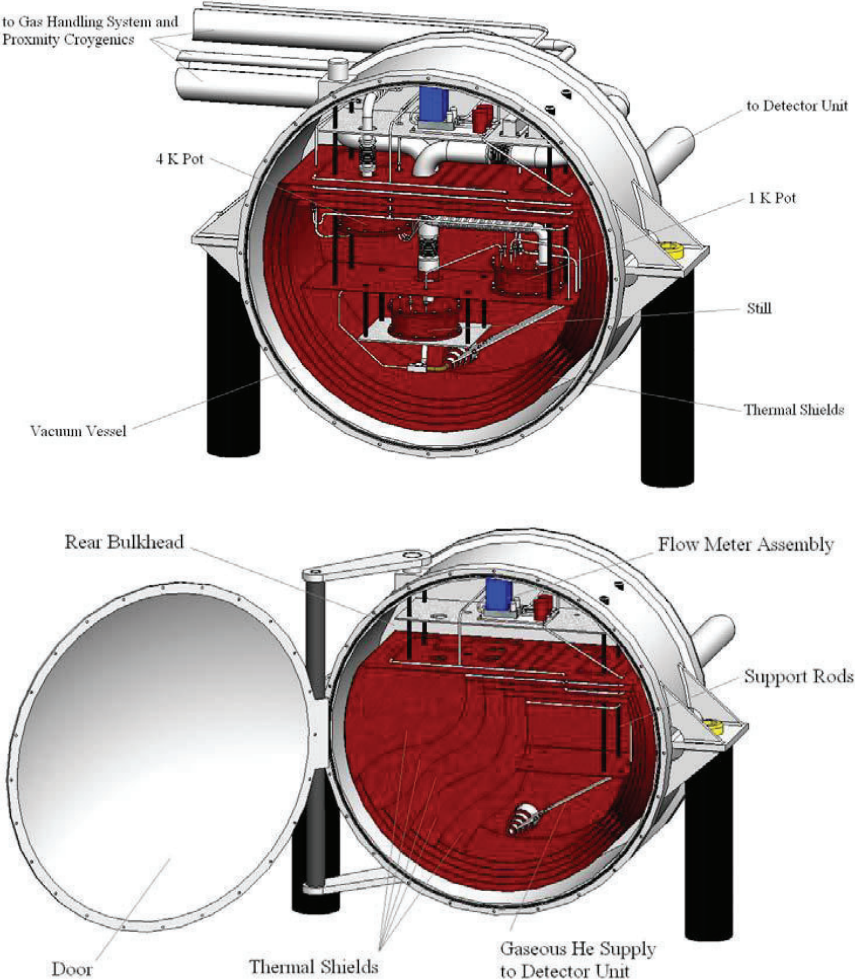
Many of our innovations reflect groundbreaking science, but some are just common sense. For example, the Icebox is the first cryogenic system built with a door so you don't need to disassemble it to access your qubits – that shouldn't have taken 40 years.

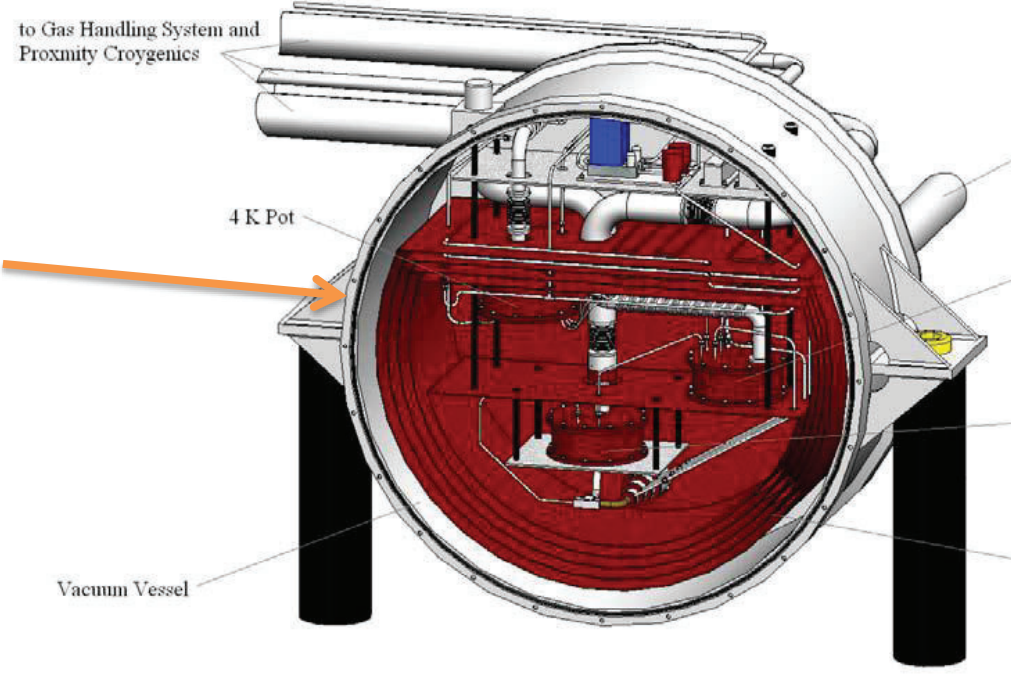
See, [Colorado's Maybell Quantum Exits Stealth, Unveils The "Icebox"](#). Indeed, it did not take 40 years, and the prior art is replete with cryogenic systems having doors.

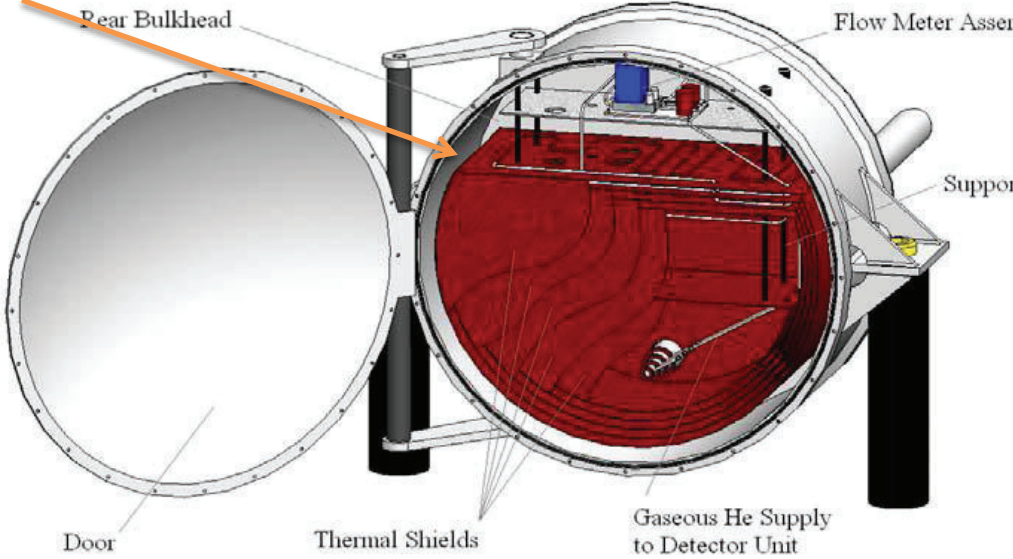
As an example and without limitation, the attached dissertation "*Dilution Refrigeration of Multi-Ton Cold Masses*," published January 2007 by Wikus (herein "Wikus"; Exhibit 1) at pages 117-141 discloses a dilution refrigerator for the EURECA cold mass experiment. As shown in the chart below, the Wikus reference anticipates the asserted claims of the '320 patent.

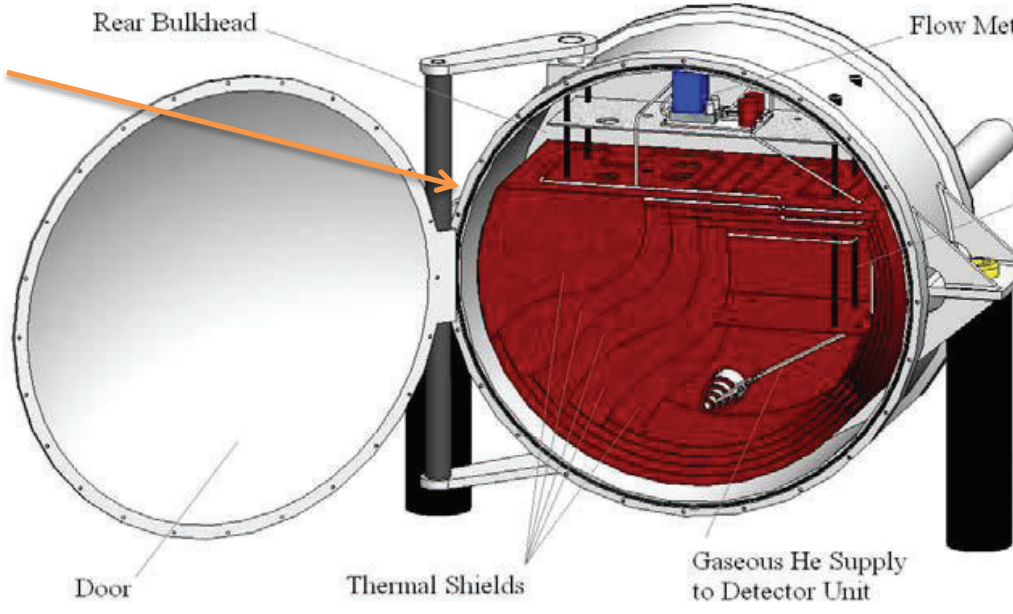
US 12,313,320	Wikus, " <i>Dilution Refrigeration of Multi-Ton Cold Masses</i> " published January 2007
[1.pre] A dilution refrigerator comprising:	<p>Wikus discloses a dilution refrigerator. Pages 117-141 of Wikus describe "<i>A Dilution Refrigerator of a Multi-Ton Cold Mass</i>". Page 117 states: "The results from the previous chapters have been used for a design study of the <i>refrigeration system</i> for the multi-ton cold mass experiment EURECA." Page 127 states: "The EURECA <i>dilution refrigerator</i> will thus be more than four times as powerful as the most sophisticated machine existing today." Figures 54, 56 and 57 on pages 122, 130 and 131, respectively, disclose the dilution refrigerator structure:</p>  <p>The top diagram is a cross-sectional view of the dilution refrigerator. It shows a large cylindrical vacuum vessel containing several nested pots: a 4 K Pot at the top, followed by a 1 K Pot, and a Still at the bottom. Thermal shields are positioned between these pots. The vessel is supported by thick black legs. On the left, a pipe leads 'to Gas Handling System and Proximity Cryogenics'. On the right, a pipe leads 'to Detector Unit'. The bottom diagram shows the same refrigerator with its door open to the left. The door is a large, flat, circular plate. Inside, the rear bulkhead is visible, along with support rods holding the internal components. A flow meter assembly is located near the top right. A gaseous helium supply line is shown entering from the bottom right, labeled 'Gaseous He Supply to Detector Unit'. Thermal shields are also visible in this view.</p>
[1.a] an outer vacuum chamber comprising an outer	Wikus at Figures 56 and 57 on pages 130 and 131 discloses a dilution refrigerator having an outer vacuum chamber comprising an outer housing having at least one substantially planar surface:

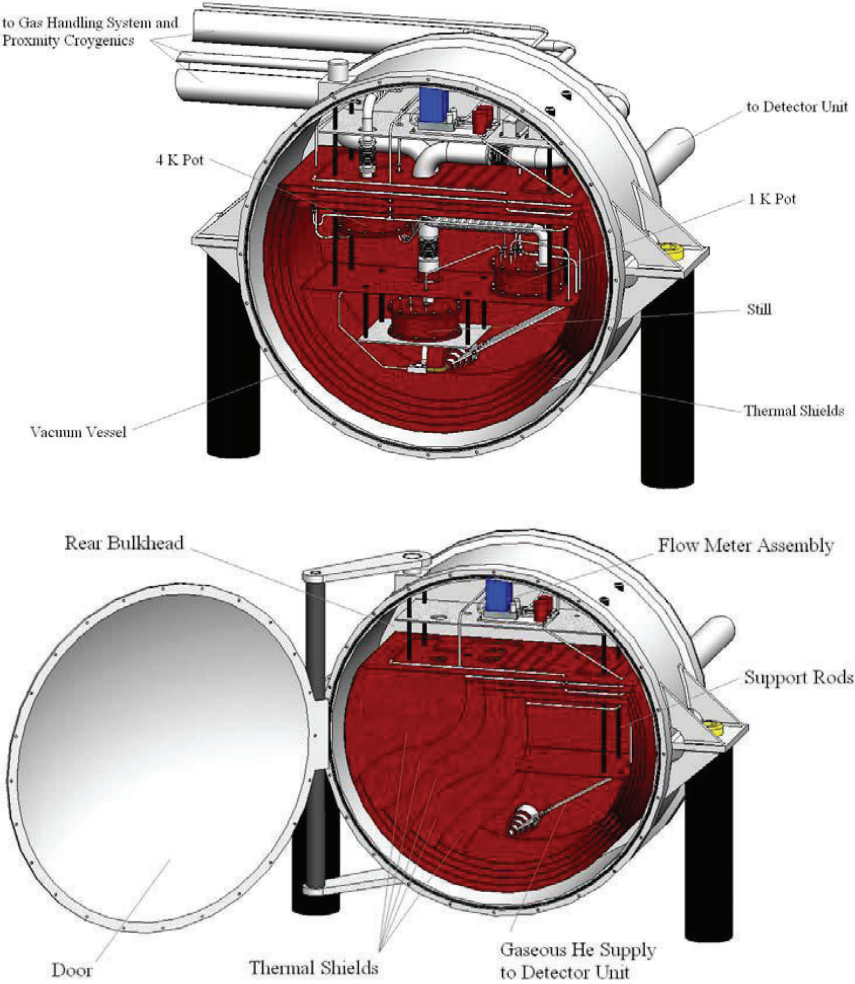
US 12,313,320	Wikus, "Dilution Refrigeration of Multi-Ton Cold Masses" published January 2007
housing having at least one substantially planar surface; and	
[1.b] an opening in the at least one substantially planar surface of the outer housing configured to provide access to an experimental volume disposed within an interior of the outer vacuum chamber.	<p>Wikus at Figures 56 and 57 on pages 130 and 131 discloses a dilution refrigerator having an opening in the at least one substantially planar surface of the outer housing configured to provide access to an experimental volume disposed within an interior of the outer vacuum chamber:</p> 

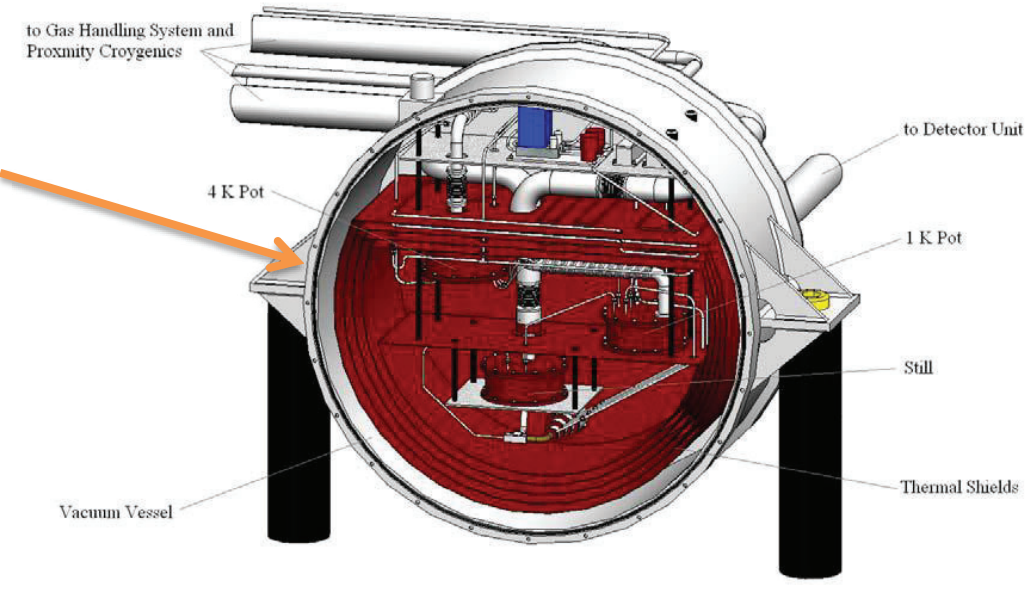
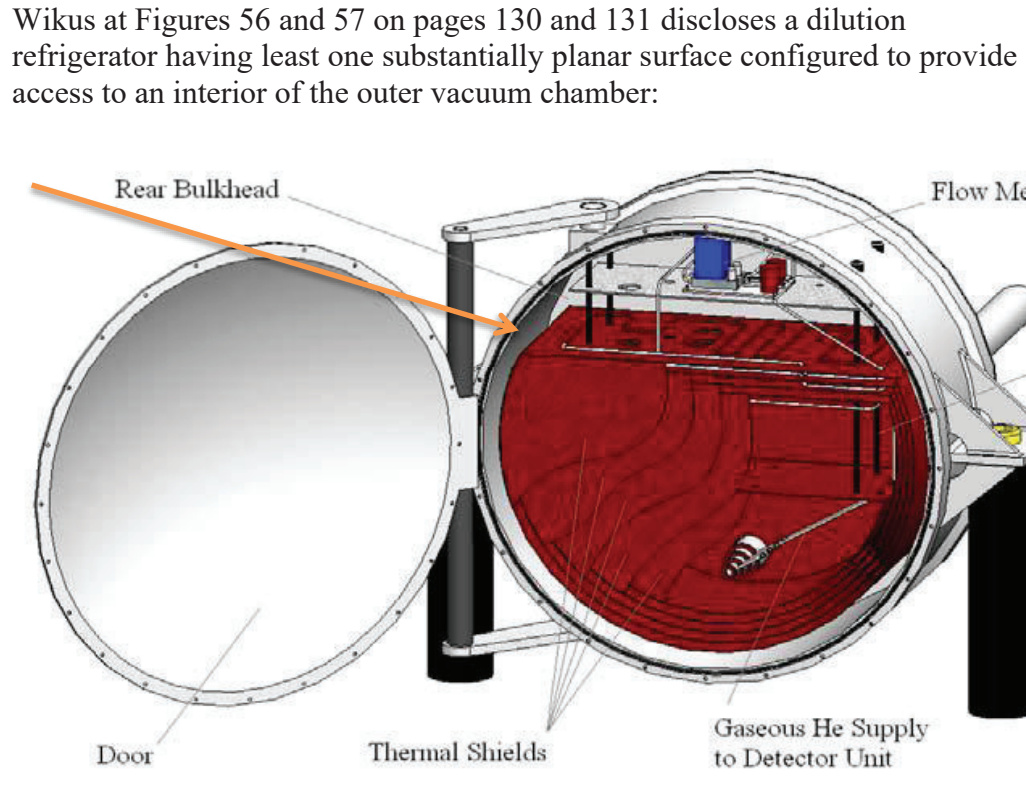
US 12,313,320	Wikus, " <i>Dilution Refrigeration of Multi-Ton Cold Masses</i> " published January 2007
	<p>See also, Page 130: "All components are accommodated in a single vacuum space of cylindrical shape such that all parts can be maintained through the front hatch without performing any disassembly work."</p> <p>Page 130: "On its front side, a door allows for access to the subsystems installed inside."</p>
[17.pre] A dilution refrigerator comprising:	<p>Wikus discloses a dilution refrigerator. Pages 117-141 of Wikus describe "A <i>Dilution Refrigerator of a Multi-Ton Cold Mass</i>". Page 117 states: "The results from the previous chapters have been used for a design study of the <i>refrigeration system</i> for the multi-ton cold mass experiment EURECA." Page 127 states: "The EURECA <i>dilution refrigerator</i> will thus be more than four times as powerful as the most sophisticated machine existing today." Figures 54, 56 and 57 on pages 122, 130 and 131, respectively, disclose the dilution refrigerator structure:</p> 

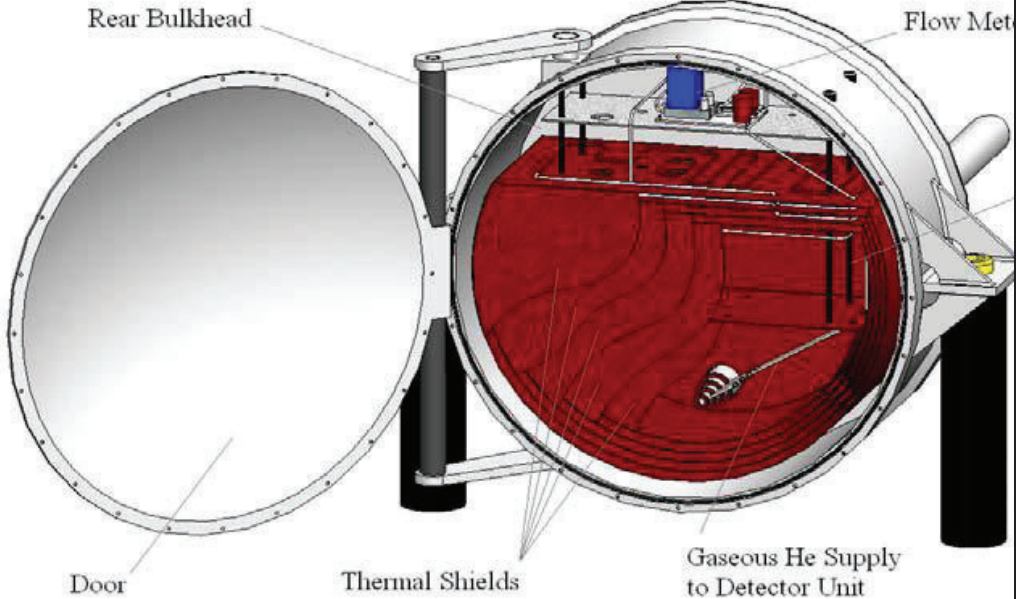
US 12,313,320	Wikus, “ <i>Dilution Refrigeration of Multi-Ton Cold Masses</i> ” published January 2007
[17.a] an outer vacuum chamber comprising an outer housing having at least one substantially planar surface; and	<p>Wikus at Figures 56 and 57 on pages 130 and 131 discloses a dilution refrigerator having an outer vacuum chamber comprising an outer housing having at least one substantially planar surface:</p> 
[17.b] an opening in the at least one substantially planar surface of the outer housing configured to provide access to an experimental volume disposed within an interior of the outer vacuum chamber,	Wikus at Figures 56 and 57 on pages 130 and 131 discloses a dilution refrigerator having an opening in the at least one substantially planar surface of the outer housing configured to provide access to an experimental volume disposed within an interior of the outer vacuum chamber:

US 12,313,320	Wikus, "Dilution Refrigeration of Multi-Ton Cold Masses" published January 2007
	 <p>See also, Page 130: "All components are accommodated in a single vacuum space of cylindrical shape such that all parts can be maintained through the front hatch without performing any disassembly work."</p> <p>Page 130: "On its front side, a door allows for access to the subsystems installed inside."</p>
<p>[17.c] wherein the at least one substantially planar surface of the outer housing comprises a first surface disposed within a plane perpendicular to a plane of a floor supporting the dilution refrigerator.</p>	<p>Wikus at Figures 56 and 57 on pages 130 and 131 discloses a dilution refrigerator having an opening in the at least one substantially planar surface of the outer housing that comprises a first surface disposed within a plane perpendicular to a plane of a floor supporting the dilution refrigerator:</p>

US 12,313,320	Wikus, " <i>Dilution Refrigeration of Multi-Ton Cold Masses</i> " published January 2007
	
[18. pre] A dilution refrigerator comprising:	Wikus discloses a dilution refrigerator. Pages 117-141 of Wikus describe "A <i>Dilution Refrigerator of a Multi-Ton Cold Mass</i> ". Page 117 states: "The results from the previous chapters have been used for a design study of the <i>refrigeration system</i> for the multi-ton cold mass experiment EURECA." Page 127 states: "The EURECA <i>dilution refrigerator</i> will thus be more than four times as powerful as the most sophisticated machine existing today." Figures 54, 56 and 57 on pages 122, 130 and 131, respectively, disclose the dilution refrigerator structure:

US 12,313,320	Wikus, "Dilution Refrigeration of Multi-Ton Cold Masses" published January 2007
	 <p>The top diagram is a cross-sectional view of a dilution refrigerator. It shows a large outer vacuum vessel containing several internal components. At the top, there are connections labeled 'to Gas Handling System and Proximity Cryogenics'. Inside, there are two main pots: a '4 K Pot' and a '1 K Pot'. Below the 1 K Pot is a 'Still'. The interior is lined with 'Thermal Shields'. A connection on the right side is labeled 'to Detector Unit'. The entire assembly is supported by thick black legs.</p> <p>The bottom diagram shows the same refrigerator with its 'Door' open, revealing the 'Rear Bulkhead'. It also shows a 'Flow Meter Assembly' and 'Support Rods' holding internal components. A 'Gaseous He Supply to Detector Unit' is indicated at the bottom. 'Thermal Shields' are also labeled in this view.</p>
[18.a] an outer vacuum chamber comprising an outer housing having at least one substantially planar surface; and	Wikus at Figures 56 and 57 on pages 130 and 131 discloses a dilution refrigerator having an outer vacuum chamber comprising an outer housing having at least one substantially planar surface:

US 12,313,320	Wikus, <i>"Dilution Refrigeration of Multi-Ton Cold Masses"</i> published January 2007
	 <p>to Gas Handling System and Proximity Cryogenics</p> <p>4 K Pot</p> <p>Vacuum Vessel</p> <p>to Detector Unit</p> <p>1 K Pot</p> <p>Still</p> <p>Thermal Shields</p>
<p>[18.b] an opening in the at least one substantially planar surface configured to provide access to an interior of the outer vacuum chamber,</p>	<p>Wikus at Figures 56 and 57 on pages 130 and 131 discloses a dilution refrigerator having least one substantially planar surface configured to provide access to an interior of the outer vacuum chamber:</p>  <p>Rear Bulkhead</p> <p>Door</p> <p>Thermal Shields</p> <p>Flow Met</p> <p>Gaseous He Supply to Detector Unit</p> <p>See also, Page 130: "All components are accommodated in a single vacuum space of cylindrical shape such that all parts can be maintained through the front hatch without performing any disassembly work."</p>

US 12,313,320	Wikus, “ <i>Dilution Refrigeration of Multi-Ton Cold Masses</i> ” published January 2007
	Page 130: “On its front side, a door allows for access to the subsystems installed inside.”
[18.c] wherein the opening comprises a hinged door.	<p>Wikus at Figures 56 and 57 on pages 130 and 131 discloses a dilution refrigerator having an opening in the at least one substantially planar surface of the outer housing that comprises a hinged door:</p> 

The Wikus reference also anticipates at least non-asserted claims 2-3, 5-8 and 19 of the '320 patent. Wikus further renders the asserted claims and additional non-asserted claims of the '320 patent obvious, to the extent they are not anticipated. In that respect, please find attached Exhibits 2-10, which demonstrate the state of the art at the time the priority application for the '320 patent was filed. Of particular note is U.S. Patent Publication No. 2012/0102975 to Garside et al. “Garside” (Ex. 2), U.S. Patent Publication No. 2022/0221107 to Gumann et al. (Ex. 3) “Gumann”, a “*Quantum sensing*” presentation delivered at the APS March Meeting of 2020 (Ex. 4), WO 2021/102181 (PCT app. filed 11/19/2020) by High Precision Devices Inc. (Ex. 5), Matheny et al., ‘Direct thermodynamic measurements of the energetics of information processing,’ Technical Report, “Matheny” (Ex. 6) and J.-P. Kappler *et al.*, ‘Ultralow-temperature device dedicated to soft X-ray magnetic circular dichroism experiments,’ “Kappler” (Ex. 7).

Garside discloses a dilution refrigerator as a “cryostat 50 [that] comprises an outer vacuum vessel 4 which is closed except for a port 52 covered by a large diameter gate valve 5.” See ¶ [0038]. “Within the vacuum vessel 4 is located a first radiation shield 54 having an aperture 56 aligned with the aperture 52 of the vacuum chamber, and within the first radiation shield 54 is located a second radiation shield 10 having an aperture 58 aligned with the apertures 52,56. The radiation shields 10,54 surround a working region 20 at which is located a

cold mounting body 15.” *Id.*, see also, Figs. 1-3; ¶ [0044] “cold [mounting] body 15...could by way of example be connected to the mixing chamber of a dilution refrigerator”.

Gumann discloses a dilution refrigerator as “cryostat 100, in accordance with one or more embodiments described herein.” ¶ [0038], (see reference to “Mixing Chamber stage” in ¶ [0039]). Garside continues: “[a]s shown in FIG. 1, cryostat 100 comprises an outer vacuum chamber 110 formed by a sidewall 112 intervening between a top plate 114 and a bottom plate 116. In operation, outer vacuum chamber 110 can maintain a pressure differential between an ambient environment 120 of outer vacuum chamber 110 and an interior 130 of outer vacuum chamber 110. Cryostat 100 can further comprise a plurality of thermal stages (or stages) 140 disposed within interior 130 that are each mechanically coupled to top plate 114. The plurality of stages 140 includes: stage 141, stage 143, stage 145, stage 147, and stage 149.” *Id.* Paragraphs [0047] and [0048] explain: “For example, inner chamber 420 can comprise a feedthrough port 422 intervening between sample mounting surface 430 and top plate 510. Inner chamber 420 can further comprise a feedthrough port 424 intervening between sample mounting surface 430 and bottom plate 520. Feedthrough ports 422 and 424 can facilitate providing lines 440 and 450 of an input/output line pair with access to sample mounting surface 430 from exterior region 505...To mitigate such obstructions, top plate 510 and thermal stage 530 can include feedthrough ports 512 and 532, respectively, that align with feedthrough port 422.”

Quantum sensing demonstrates at pages 9 and 10 two or more dilution refrigerators connected by a cryogenic link. The figures depict dilution refrigerators with a vacuum housing having at least one planar surface configured to provide access to an experimental volume disposed within an interior of the outer vacuum chamber, where the opening is disposed within a plane perpendicular to a plane of a floor supporting the dilution refrigerator. WO ’181 discloses an outer vacuum chamber at ¶ [0048] that comprises an outer housing 124 having at least one substantially planar surface. Paragraph [0048] also discloses that outer housing 124 can be a cubic housing or a rectangular box; FIG. 3C shows that outer housing 124 is planar at least along part of its perimeter; and FIG. 11 demonstrates cubic outer housing 124. Paragraph [0051] discloses that “[t]he outer housing may comprise a removeable lid, a door, or other structure that enables access to the components on the interior. The outer housing also comprises a gated slot, i.e. a slot and associated door that can be actuated to cover and uncover the slot. By this gated slot, the wafer or other component to be tested may be introduced into and withdrawn from the device”; see also gated slots 116a, 116b, 116c, and 116d, FIGS. 1, 2 and 3A-3C.

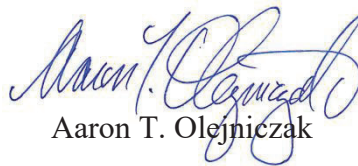
Matheny, FIG. 1, discloses a dilution refrigerator having a white box forming part of a vacuum chamber. Three circular openings are shown in respective planar surfaces of the box, each of which provides access to an experimental volume disposed within the interior of the vacuum chamber.

Kappler, FIG. 1, discloses a dilution refrigerator with openings on the top surface, bottom surface and two planar side surfaces of the cryostat providing access to a sample 4.

Other prior art references to review are listed in Exhibits 8-10¹. Exhibit 8 discloses dilution refrigerators with side access or doors or ports. Of course, placing doors on residential and commercial refrigerators has been well known for decades, as is placing doors on vacuum chambers or otherwise forming openings in cryostats, see Exhibit 9. The additional references in Exhibit 10 are immediately relevant to the other dependent claims and several of the preferred features from the '320 patent. **We remind you of your duty of disclosure to the USPTO regarding this art.**

In light of the extensive prior art, Oxford Instruments believes this issue is best resolved for both parties through an agreement where Maybell covenants not to sue Oxford Instruments under the '320 patent or any patent related to the '320 patent, and Oxford Instruments agrees not to contest the validity of claims of the '320 patent or any patent related to the '320 patent. Please confirm this is acceptable and we will prepare the appropriate paperwork. We request a response within two weeks of the date of this letter. If we are unable to resolve this matter by the end of September, Oxford Instruments will seek to institute proceedings to invalidate the claims of the '320 patent before the USPTO. While Oxford Instruments reserves all rights, it is hopeful that the parties can reach an amicable resolution as proposed above.

Sincerely,



Aaron T. Olejniczak

ATO/mgm/jjm

¹ The claims of the '320 patent are subject to differing effective filing dates, which affects the scope of prior art applicable to each claim.