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| FD3       | 1 of 17 | 63%                     |

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### CLAIMS

1. A tank for a tanker, having at least one tank (10) in which is located a collapsible container (19) for liquid cargo, the collapsible container comprising a flexible lower wall configured to allow the container to collapse upwardly.
2. A tank for a tanker according to claim 1, wherein the container comprises walls and wherein~~in which~~ at least some (21, 22) of the walls of the container (19) are flexible.
3. A tank for a tanker according to claim 1 or 2, in which the container (19) has at least one rigid wall (15) to which the flexible wall or walls (21, 22) are connected and sealed, and towards which the flexible walls can collapse.
4. A tank for a tanker according to claim 2 or 3, in which the tank (10) has rigid walls (11, 12) on or against which the flexible walls (21, 22) of the container (19) can be supported.
5. A tank for a tanker according to claim 4, in which the tank (10) is open at the top and delimited by rigid side walls (12) and a rigid base (11), and the container (19) is arranged within it, the tank and container having matching horizontal cross-sections such that the container fits closely inside the tank.
6. A tank for a tanker according to ~~claim 5~~any preceding claim, including a means (26) for supplying liquid cargo into, and withdrawing cargo from, the collapsible container (19).
- ~~6-7.~~ A tank for a tanker according to claim 6, wherein the means for supplying liquid cargo is provided from above.
8. A tank for a tanker according to ~~claim 5 or 6~~any preceding claim, further including means (31, 32, 33) for transferring liquid ballast into, and draining ballast from, the space between the

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tank (10) and the outside of the collapsible container (19).

9. A tank for a tanker according to claim 8, wherein the means for transferring liquid ballast is installed at a base of the tank.

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10. A tank for a tanker according to any preceding claim, further comprising a cover which forms the upper boundary of the container.

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11. A tank for a tanker according to claim 10, wherein the cover carries a vent valve for venting gases.

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12. A tank for a tanker according to claim 11, wherein the vent valve is temperature sensitive.

13. A tank for a tanker according to any preceding claim, wherein the shape of the container is substantially the same as (greater than or equal to 90% of) the tank when the container is fully expanded.

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14. A tank for a tanker according to any preceding claim, wherein the internal volume of the container is substantially the same as (greater than or equal to 90% of) the tank when the container is fully expanded.

15. A tank for a tanker according to any preceding claim, wherein the collapsible container comprises a plastic material reinforced with a textile material.

16. A tank for a tanker according to any preceding claim, wherein the container is made entirely out of flexible material.

17. A tank for a tanker according to claim 16, wherein the container is held in the top region of the tank.

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~~7-18.~~ A tank for a tanker according to any preceding claim, wherein the container can be removed from the container.

19. A method for transporting liquid cargo in a tanker, in which the cargo is introduced into an initially collapsed collapsible container in a rigid tank in the tanker, thereby causing the

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container to expand, and the cargo is then transported within the collapsible container in the tanker; and when the cargo is drained off, causing or allowing the container to collapse, and simultaneously the resulting space is at least partially filled with ballast.

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20. The method of claim 19, wherein as the container expands it is supported at all times by ballast, preferably water.

21. The method of claim 19 or 20, wherein a thin layer of ballast, preferably water, remains between the base of the container and the base of the tank.

22. The method of claims 19-21, wherein there is no pressure difference between the tank and the container while the cargo is drained off.

23. The method of claims 19-22, wherein ballast is removed from the tank at the same time as cargo is introduced into the container.

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~~8-~~24. A tanker comprising a tank as claimed in any of Claims 1-18.

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Claims

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### Letter to UKIPO

This is Applicant's response to the Exam Report under s.18(3) issued on 26 July 2023. Filed herewith are an amended set of claims on the basis of which it is requested that examination proceeds. Changes are also shown in markup.

### Amendments

Claim 1 has been amended to state that the container comprises a flexible lower wall. Basis for this amendment can be found in e.g. p8 l12-13, where it is stated that the container comprises a flexible lower wall, as well as in Fig 3 where lower wall 21 is clearly flexible. It is not required to include further specifics of the flexible material (e.g. the plastic reinforced with textile material) also in this paragraph, as the passage on p8 l18-19 clearly states that the container could be made entirely out of flexible material generally, therefore the skilled person would understand that no specific requirement of the particular material is required, and this this was purely exemplary.

Claim 1 has been further amended to state that the flexible lower wall is configured to allow the container to collapse upwardly. Basis for this amendment can be found in e.g. p9 l7-8 and p9 l33-34, where it is described that the container can collapse upwardly, i.e. towards the cover (although a cover is not required).

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Claim 1, and the claims dependent thereon, have been amended to now relate to a container for a tanker, rather than a tanker *per se*. Basis for this amendment can be found in e.g. the description of fig 3, which suggests that it is the tanks which are in accordance with the invention, rather than the tanker itself.

Claim 2 has been amended to provide antecedent basis for the walls of the container.

New claim 7 finds basis in p8 l25-27.

New claim 9 finds basis in p9 l1-3.

New claim 10 finds basis in p8 l7-8.

New claim 11 finds basis in p8 l29-31.

New claim 12 finds basis in p8 l29-31.

New claims 13 and 14 find basis in p8 l23-25.

New claim 15 finds basis in p8 l11-12.

New claims 16 and 17 find basis in p8 l17-20.

New claim 18 finds basis in p6 l14-15.

Claim 19 (corresponding to previous Claim 8) has been amended to state that the resulting space is simultaneously at least partially filled with ballast. Basis for this amendment can be found in e.g. p10 l2-5, which describes how water (i.e.

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ballast, as the skilled person would understand) fills the space previously occupied by the container as it is collapsed.

New claim 20 finds basis in p9 l19-20.

New claim 21 finds basis in p9 l24-25.

New claim 22 finds basis in p10 l5-8.

New claim 23 finds basis in p9 l15-16.

New claim 24 finds basis in claim1 as filed.

Support 6

The dependencies of certain claims have also been expanded.

None of these amendments introduces any subject matter extending beyond the content of the application as filed. The requirements of s.76 are satisfied.

### **Novelty**

The Examiner objects that claim 1 lacks novelty over D1 and D2. In light of the amendments made to claim 1, applicant submits that the Examiner's objections are now moot.

As regards D1, there is no disclosure therein of a collapsible container which has a flexible base. If the Examiner considers the concertina/ballast container to be

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the base, then p16 I20-22 describes that the container has a metal plate (which is not a flexible material) which is firmly secured to the base of the compartment.

Even if the Examiner considers the compartment above the concertina to be the flexible container, then D1 describes a system where the top plate 12 is also metal, and therefore not flexible (p16 I25). Therefore neither interpretation provides a flexible base. Claim 1 is therefore novel over D1.

Turning to D2, it is clear from the figure 2 that the flexible containers delimited by walls 25 are only ever attached to the base of the tank such that this tank forms the base. This tank base is not disclosed as being flexible. Consequently the claimed subject matter is also novel over D2.

The remaining claims dependent on claim 1 are novel by virtue of dependency.

The Examiner also appears to allege that previous Claim 8 may be considered to lack novelty over D1, even though they have not raised this as a formal objection.

As a preliminary point, the Examiner's objection is without merit, as the claim requires that as the resulting space formed by collapse of the container as the cargo is removed is filled with water. This is not the case, as in D1 it is only after the water is pumped in that water is provided.

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Nonetheless, to further clarify this point, Claim 19 has been amended to state that this filling is simultaneous. Such a process is not disclosed in D1, which clearly states that water is pumped in after removal of the cargo (p17 l18). Claim 18 is therefore novel over D1.

Novelty 5  
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No such process as claimed is described in D2 either, based on the description in the patent.

The claims dependent on claim 19 are therefore novel by virtue of dependency.

**Inventive step**

Using the Windsurfing/Pozzolli approach, the person skilled in the art (PSA) is a designer of tankers and containers for tankers specifically. Their common general knowledge (CGK) includes knowledge of the general structure of tankers (as described in p4 l2-20 and fig 1), and the use of segregated flexible containers (as suggested in the background of Doc C. D2 is a patent document, and although identified in the background section this is therefore not indicative of CGK.

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The inventive concept of Claim 1 is to provide a collapsible container for transporting cargo which prevents stresses being placed on the walls of the container and to prevent explosion risk (p5 l22-24).

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The state of the art is D1, as it shares the most features with the claimed subject matter. The difference between these is the presence of a flexible lower wall which allows the container to collapse upwardly.

This is not disclosed or suggested by D1, which requires that its lower wall is made of metal and is firmly secured to the base of the tank (p16 l21-22). As a result of this, the container can only collapse downwardly (p17 l29-31), this being promoted by the force of gravity. If the skilled person were to attempt to provide a flexible base to the embodiment of D1, they would have to substantially redesign it, as a flexible base would not serve as a suitable attachment point for stable compression of the concertina system. Moreover, attempting to configure the container to collapse upwardly (e.g. by inverting the system so as to have the base be at the top of the tank 9) would not permit effective collapse of the concertina as this is said to be under the effect of gravity, therefore it is likely that D1's system would just hang extended within the space unless significant redesign is put in place, inhibiting the cargo loading.

Furthermore, the flexible lower surface and the downward expansion of the container (holding the cargo) can act synergistically to support the flexible

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container (p9 I19-20), and this also permits a thin layer of water to remain between the base of the tank and the base of the membrane, and the side walls, to act as a lubricant to minimise damage to the membrane of the container (see p9 I24-31). Such an advantage is not suggested by D1, nor is it possible with the system described therein, as the water is fully contained within the concertina and is emptied before the cargo is introduced. Therefore, Claim 1 is inventive over D1.

Similarly, even taking D2 as the state of the art would not lead the PSA to the invention in an obvious way. D2 similarly provides no suggestion or incentive to provide a flexible base to the container. The configuration of D2 is designed to expand outwardly, and therefore requires secure anchorage to the base which would be rendered ineffective by a flexible base allowing contraction upwards. The subject matter of claim 1 is therefore also inventive over D2.

While the PSA may consider combining D1 and D2, as they are in the same field, this still wouldn't lead them to the claimed invention, as D2 similarly provides no suggestion or incentive to provide a flexible base to the container, as discussed above. Therefore Claim is also inventive over D1 in combination with D2.

Nor, starting from D2, does the combination with D1 render the invention obvious.

I.S.

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Claim 8

In the Report, the Examiner also argues that previous Claim 8 (current claim 19) lacks inventive step over the method of D1.

For this claim, the PSA is the same as stated above, and their CGK is also the same, knowing in particular the method set out in p4 I9-20.

The inventive concept of claim 19 is to provide a method for loading and unloading cargo which allows for the hold to be filled at all times with liquid of some kind (p6 I25-26).

The state of the art is D1's method. The difference between these is that, as the cargo is being unloaded from the container, simultaneously the resulting space is at least partially filled with ballast.

D1 does not disclose any such simultaneous filling when unloading the cargo. As mentioned, its method states explicitly that ballast is to be provided after removal of the cargo liquid (p17 I18). Thus, there are significant periods of time present where the cargo is exposed to air as it is being drained – as mentioned in the patent, this increases the risk of explosions from volatile components mixing (p5 I29-32).

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This simultaneous feeding is not suggested by D1, and means that methods of the present invention involve a hold being filled at all times with liquid to mitigate any explosion risk (p6 I25-26) and to preserve the trim/balance of the ship during loading/unloading (p6 I30-33).

Simply reversing the roles of each of these containers in D1, as the Examiner asserts is obvious, would still involve large periods where the volume is not filled, and therefore these methods are not suggested by D1. Claim 19 is therefore inventive over D1.

Similarly, D2 does not provide any indication (based on the description in the patent) of such simultaneous action, therefore it cannot, either alone or in combination with D1, provide any incentive for the PSA to arrive at the claimed invention.

I.S. 3

The dependent claims are also therefore inventive by virtue of their dependency on claim 1 or 19, as relevant.

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### Conclusion

Applicant believes that the claims are allowable. Request for oral proceedings in the event of rejection is submitted.

Yours faithfully

Attorney

Letter

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MARKS AWARDED: 24/37

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### Client memo

Deadline for response is 26 November 2023 – so we have time to finalise our response. Extension as of right of 2 months available if necessary.

I do believe that claim 1 required amendment, as D1 discloses a tanker (p16 l5) with a tank (compartment – p16 l5 and fig 1) which contains a collapsible container (container 10 which can collapse – p17 l9). While the claim says that the container is for liquid cargo, rather than ballast as D1 is used for, standard practice construes 'for' to mean 'suitable for', and it appears that the container of D1 would be suitable for carrying liquid cargo as well – but please let me know if you believe this not to be the case, as this could then be a potential point of novelty.

Also, D2 (Fig 2 of the application) can be construed as being prejudicial, as it describes a ships' ballasting system (p4 l30) i.e. from a tanker, which has a tank 10 and flexible membranes 25 which can collapse (somewhat) – even if we could argue the definition of collapsible here for strict novelty purposes, I believe the claim would still at least require amendment for inventive step purposes.

No explicit novelty objection has been raised against previous claim 8 (method claim), but on the basis of the Examiner's inventive step objection I believe it is necessary to clarify to some extent that cargo unloading is simultaneous with the ballast filling – this appears to be the crux of the claim anyway. I believe this feature is novel, and has advantages which we can point to to support inventive step arguments.

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Therefore I have amended Claim 1 to state that the container has a flexible lower surface which allows the container to collapse upwardly. I believe this amendment still retains relatively broad protection, covers your commercial embodiments and has suitable advantages associated with it.

- Have also amended claim to relate to tanks for tankers, rather than to a tanker per se, to more easily protect sales of tanks in isolation from tankers (although contributory infringement should still capture containers) – is this a possibility? To be safe, I have also included a claim to a tanker comprising the tank as otherwise claimed, as a backup.
  - Slight chance that this will be considered to lack support in the description, as clear wording claiming the tank rather than the tanker is somewhat lacking, but I believe it is worth trying to broaden the protection here as a sale of a tanker appears quite a rare endeavour.

Other Claim 1 amendments considered were:

- Container held in top region of the tank (p8 l19-20) / the underside of a cover forms the upper boundary (p8 l7-8)
  - This is not novel over D2, as the upper boundary of the water space in fig 2 is the upper cover, and the wording of 'held in tank' is vague and could be intermediate generalisation if not coupled with feature that it is attached to the lid.
- Container designed to be easily removable (p6 l14-15)

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- Client indicates that they believe this to be a novel feature, and D1 describes the bottom plate of the container being secured to the base (p16 l21-22)
  - But this amendment is quite narrowing, and may be an obvious modification – although advantages are described for this, and as the container of D2 is .
  - However, due to advantages for this, e.g. p6 l15-20, have included this as a dependent claim – although the wording may lack clarity, in which case more specific terminology may be required, e.g. the lid and screw configurations of fig 3, features 15,16,17,18 and 24
- Supply oil from above
  - Client appears to believe this to be a distinguishing feature, or at least relevant to discussion, but:
  - Disclosed in D1 – p16 l10-12 describes the oil pumping means located in the deck, therefore from above
  - Have still included dependent claim to this feature, as it can (in combination with other features) possibly provide inventive step arguments for advantages of such a way of filling – but not strong
- Shape and volume of the container substantially the same as the tank
  - Not disclosed in D1 (although reference to similar in p17 l13-14), but could be in D2 depending on the flexibility of the membranes.
  - Also appears like a routine modification to adjust the sizes of the containers to hold more ballast

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Considered amendments for Claim 8:

Amendment chosen for reasons described above – but slight possibility that Examiner will object to the broader term of ballast rather than specifically water, which is described as the ballast in the passages providing basis for the amendment. However I believe it is likely that the PSA would understand water to be exemplary and not tied to a specific function of the method beyond its general ballasting capabilities.

Others:

- Applying the simultaneous filling to the step of loading the cargo as well (see p9 l15-16)
  - Would strengthen inventive step arguments, but unduly limiting to have both steps require this – could perhaps consider including both as a clause 'wherein either/or' as a further dependent claim if necessary.
  - Have included the simultaneous removal of ballast as dependent claim as it also provides the same advantage.
- Supported at all times by ballast
  - Slightly narrower protection than chosen amendment, and unclear wording so not preferable

Other dependent claims added to the temperature sensitive valve as this has an advantage and is not disclosed at all in the prior art, but not included as amendment as very narrowing.

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- Could the valve be patentable by itself? Have any unique modifications been made to it for work in an oil tanker?

Other matters

Doc C has granted in GB in 1996 – therefore irrespective of filing date this will have expired and cannot be enforced – but check for other filings from same applicant (ship ahoy) which are later.

Also check if they (applicant of Doc C, Ship Ahoy) are operating with containers which would infringe yours (but unlikely due to patent).

Compliance period – app. Filed 20 October 2020 – therefore compliance should be 20 April 2025 – still plenty of time to file divisionals or receive further reports

Note that there are certain defences to infringement relating to acts performed on ships, e.g. those being temporarily in British waters – ships may need to be registered in the UK for these not to apply

- However, the product claims to the tank/tanker should not fall foul of these defences

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Notes

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