CLAIMS:

1. A well system, comprising:

a well tool including a pressure bearing housing assembly exposed to pressure in a wellbore, whereby a pressure differential is applied across a pressure bearing wall (24) of the housing assembly, the pressure bearing wall (24) being supported against the pressure differential by a support structure (26).

2. The well system of claim 1, wherein the support surface contacts the pressure bearing wall when the pressure differential increases.

3. The well system of claim 1 or 2, wherein the support structure is helically shaped.

4. The well system of claim 1 or 2, wherein the support structure comprises a helically extending support surface spaced apart from a base of the support structure.

5. The well system of claim 4, wherein there is contact between the support surface and the pressure bearing wall in response to the pressure differential being greater than a predetermined level.

6. The well system of claim 4, wherein there is contact between the support surface and the pressure bearing wall only

when the pressure differential is greater than a predetermined level.

7. The well system of any of the preceding claims, wherein a fluid chamber (34) extends through the support structure.

8. The well system of claim 7, wherein fluid flows through the chamber (34) while the support structure supports the pressure bearing wall against the pressure differential.

9. The well system of any of the preceding claims, wherein the pressure bearing wall is generally tubular shaped, and wherein the support structure is generally tubular shaped and is positioned internal to the pressure bearing wall.

10. A pressure bearing housing assembly, comprising:

a pressure bearing wall (24); and

a support structure (26) which supports the pressure bearing wall against a pressure differential applied across the wall only when the pressure differential is greater than a predetermined level.

11. The pressure bearing housing assembly of claim 10, wherein the support structure comprises a helically extending support surface spaced apart from a base of the support structure.

12. The pressure bearing housing assembly of claim 10, wherein the support surface contacts the pressure bearing wall in response to the pressure differential being greater than the predetermined level.

13. The pressure bearing housing assembly of any of claims 10 to 12, wherein a fluid chamber extends through the support structure.

14. The pressure bearing housing assembly of claim 13, wherein fluid flows through the chamber while the support structure supports the pressure bearing wall against the pressure differential.

15. The pressure bearing housing assembly of any of claims 10 to 14, wherein the pressure bearing wall is generally tubular shaped, and wherein the support structure is generally tubular shaped and is positioned internal to the pressure bearing wall.

16. The pressure bearing housing assembly of any of claims 10 to 15, wherein the support structure is helically shaped.

17. A method of supporting a pressure bearing wall (24) against a pressure differential applied across the wall, the method comprising:

positioning a support structure (26) proximate the pressure bearing wall, the support structure having a support surface formed thereon; and

the support surface contacting the pressure bearing wall and supporting the wall against the pressure differential.

18. The method of claim 17, further comprising applying the pressure differential across the pressure bearing wall at least in part by installing the pressure bearing wall and support structure in a wellbore.

19. The method of claim 17 or 18, wherein the support surface does not contact the pressure bearing wall when the pressure differential is less than a predetermined level.

20. The method of claim 17 or 18, wherein the support surface contacts the pressure bearing wall only when the pressure differential is greater than a predetermined level.

21. The method of any of claims 17 to 20, further comprising flowing fluid into a chamber (34) of the support structure.

22. The method of claim 21, wherein the fluid flowing step is performed after the support surface contacts and supports the pressure bearing wall.

23. The method of any of claims 17 to 22, wherein the support structure is helically shaped.

What is claimed is:

1. A well system for a wellbore, comprising:

a well tool including a pressure bearing housing assembly comprising:

an outer wall surrounding an interior;

an inner support structure in the interior of the outer wall and including a base spaced radially inward from the outer wall and a support extending radially outward from the base, the base including a flow passage therethrough; and

a fluid chamber located between the outer wall and the base; and

wherein the inner support structure configured to radially outwardly support the outer wall against a pressure differential that would otherwise inwardly collapse of the outer wall.

2. The well system of claim 1, wherein the outer wall is spaced apart from the inner support structure so as to only come into contact with the support upon being subjected to a pressure differential increase.

3. The well system of claim 1, wherein the support is helically shaped.

4. The well system of claim 1, wherein the fluid chamber extends along the entire support.

5. The well system of claim 4, wherein fluid may flow through the fluid chamber while the inner support structure is supporting the pressure bearing wall against the pressure differential.

6. The well system of claim 1, wherein the pressure bearing wall is generally tubular shaped, and wherein the base is generally tubular shaped.

7. The well system of claim 1, the well tool further comprising a fluid channel through the well tool that includes the flow passage of the base.

8. The well system of claim 1, wherein the inner support structure allows the outer wall to be made thinner for a given pressure differential across the outer wall.

9. The well system of claim 1, where in the inner support structure allows the outer diameter of the housing assembly to be reduced for a given pressure differential across the outer wall.

10. The well system of claim 1, wherein the inner support structure is capable of providing continual radially outward support to the outer wall.

11. The well system of claim 1, further comprising:

the pressure bearing housing assembly further comprising a channel in communication with the fluid chamber; and

wherein fluid is capable of flowing into or out of the fluid chamber via the channel.

12. The well system of claim 1, wherein the dimensions and materials of the outer wall and the inner support structure are optimized so that the outer wall can resist an expected pressure differential across the outer wall in the wellbore, while a ratio of the fluid chamber volume to pressure bearing housing assembly length is maximized.

13. A pressure bearing housing assembly, comprising:

a pressure bearing wall surrounding an interior;

a support structure in the interior of the wall and including a flow passage therethrough;

a fluid chamber formed between the support structure and the wall; and

wherein the inner support structure configured to radially outwardly support the outer wall against a pressure differential that would otherwise inwardly collapse of the outer wall.

14. The pressure bearing housing assembly of claim 13, wherein the support structure comprises:

a base; and

a helically extending support extending radially out from the base of the support structure.

15. The pressure bearing housing assembly of claim 14, wherein the wall is spaced apart from the support structure so as to only come into contact with the support upon being subjected to a pressure differential increase.

16. The pressure bearing housing assembly of claim 14, wherein the fluid chamber extends along the entire support.

17. The pressure bearing housing assembly of claim 16, wherein fluid may flow through the fluid chamber while the support structure supports the pressure bearing wall against the pressure differential.

18. The pressure bearing housing assembly of claim 13, wherein the pressure bearing wall is generally tubular shaped, and wherein the support structure is generally tubular shaped and is positioned internal to the pressure bearing wall.

19. A method of supporting a pressure bearing wall, the method comprising:

positioning a support structure inside of the pressure bearing wall, the support structure comprising a support for radially outwardly supporting less than the full surface area of the interior of the pressure bearin wall thereb formin a fluid chamber between the pressure bearing wall and the support structure;

subjecting the pressure bearing wall against a pressure differential across the wall; and

supporting the pressure bearing wall with the support structure against a pressure differential that would otherwise inwardly collapse of the pressure bearing wall.

20. The method of claim 19, further comprising subjecting the pressure bearing wall to the pressure differential by placing the pressure bearing wall and support structure in a wellbore.

21. The method of claim 19, wherein the support surface does not contact the pressure bearing wall when the pressure differential is less than a predetermined level.

22. The method of claim 19, further comprising flowing fluid into the fluid chamber.

23. The method of claim 19, wherein the support structure is helically shaped.