

CLAIMS

1. A wellhead assembly, comprising:
 - a wellhead body;
 - a wellhead hanger disposed in the wellhead body; and
 - a sealing assembly, comprising:
 - a seal body;
 - a first seal coupled to the seal body and sealing against an inner surface of the hanger;
 - a second seal coupled to the seal body and sealing against an inner surface of the wellhead body;
 - a radial lock coupled to the seal body, wherein the sealing assembly is disposed axially between the wellhead hanger and the radial lock, such that the second seal is disposed axially between a first top surface of the wellhead hanger and a bottom surface of the radial lock; and
 - an actuator configured to drive the radial lock in a radial direction between an unlocked position and a locked position,
 - wherein the wellhead assembly excludes an outer seal configured to seal directly between an outer surface of the wellhead hanger and the inner surface of the wellhead body.
2. The system of claim 1, wherein the actuator comprises a cam configured to rotate to drive the radial lock in the radial direction.
3. The system of claim 1, wherein the first and second seals are removably coupled to the seal body, the first and second seals are axially offset from one another, and at least one of the first or second seals is an elastomer.
4. The system of claim 1, wherein the seal body abuts the first top surface of the wellhead hanger, and the radial lock abuts a second top surface of the seal body.

5. A wellhead assembly, comprising:
 - a wellhead body having a landing shoulder;
 - a wellhead hanger supported in the wellhead body by the landing shoulder, wherein the wellhead hanger directly abuts the landing shoulder, the wellhead hanger comprises an upper portion disposed above the landing shoulder, and the upper portion of the wellhead hanger has an outer profile that is closely matched with and directly abuts an inner profile of an inner wellhead surface of the wellhead body above the landing shoulder to retard an ingress of debris between the wellhead hanger and the wellhead body, the outer profile extends along an axial length of the upper portion of the wellhead hanger, and the wellhead hanger excludes an outer seal configured to seal directly between the wellhead hanger and the inner wellhead surface.
6. The system of claim 5, wherein the landing shoulder is integral to the wellhead body.
7. The system of claim 5, wherein the wellhead hanger comprises a first outer surface that abuts an inner landing surface of the landing shoulder at a first interface, and the wellhead hanger comprises a second outer surface having the outer profile that abuts the inner profile of the inner wellhead surface of the wellhead body at a second interface.
8. The system of claim 7, wherein the second interface is configured to resist tilting of the wellhead hanger relative to an axis of the wellhead assembly.
9. The system of claim 7, wherein the wellhead assembly is configured to bear a load in an axial direction relative to an axis of the wellhead assembly at the first interface but not the second interface.
10. The system of claim 5, wherein each of the outer profile of the wellhead hanger and the inner profile of the inner wellhead surface extends in an axial direction coaxial with the axis of the wellhead assembly along the axial length of the upper portion of the wellhead hanger.

11. The system of claim 5, wherein the wellhead hanger comprises a wall disposed about a central bore, and the wellhead hanger comprises one or more cement passages in the wall.

12. The system of claim 5, comprising a sealing assembly, comprising:

- a seal body;

- a first seal removably coupled to the seal body and sealing against a first inner surface of the wellhead hanger;

- a second seal removably coupled to the seal body and sealing against a second inner surface of the wellhead body, wherein the first and second seals are axially offset from one another;

- a radial lock coupled to the seal body, wherein the sealing assembly is disposed axially between the wellhead hanger and the radial lock, such that the second seal is disposed axially between a first top surface of the wellhead hanger and a bottom surface of the radial lock; and

- an actuator configured to drive the radial lock in a radial direction between an unlocked position and a locked position.

13. The system of claim 12, wherein the actuator comprises a cam configured to rotate to drive the radial lock in the radial direction.

14. The system of claim 1, wherein the wellhead hanger comprises a wall disposed about a central bore, and the wellhead hanger comprises one or more cement passages in the wall.

15. The system of claim 1, wherein the wellhead hanger comprises an upper portion disposed above a landing shoulder in the wellhead body, wherein the upper portion of the wellhead hanger has an outer profile that is closely matched with and directly abuts an inner profile of an inner wellhead surface of the wellhead body above the landing shoulder to retard an ingress of debris between the wellhead hanger and the wellhead body.

16. A system, comprising:

a sealing assembly, comprising:

a seal body;

a first seal coupled to the seal body, wherein the first seal is configured to seal against a first inner surface of a hanger;

a second seal coupled to the seal body, wherein the second seal is configured to seal against a second inner surface of a wellhead body;

a radial lock coupled to the seal body, wherein the sealing assembly is configured to be disposed axially between the hanger and the radial lock, such that the second seal is disposed axially between a first top surface of the hanger and a bottom surface of the radial lock; and

an actuator configured to drive the radial lock in a radial direction between an unlocked position and a locked position,

wherein the system excludes an outer seal configured to seal directly between an outer surface of the hanger and the second inner surface of the wellhead body.

17. The system of claim 16, wherein the hanger comprises a wall disposed about a central bore, and the hanger comprises one or more fluid passages in the wall.

18. The system of claim 16, wherein the actuator comprises a cam configured to rotate to drive the radial lock in the radial direction.

19. The system of claim 16, wherein the actuator comprises a pin disposed in a slot having at least one angled slot portion, and the pin is configured to move along the slot to bias the radial lock in the radial direction.

20. The system of claim 19, wherein the slot comprises a Z-shaped slot having the at least one angled slot portion.