Claims:

1. A method involving a tubular fan case structure of a gas turbine engine, the fan case structure comprising an annular flange and a first fastener aperture that extends through the flange, and the flange comprising metallic material, the method comprising:

enlarging the first fastener aperture to provide an enlarged aperture;

friction plug welding the flange to plug the enlarged aperture with friction plug welded material, wherein the fan case structure further comprises composite material attached to the metallic material via a composite material adhesive, and wherein heat generated during the friction plug welding is less than a temperature at which molecular bonds of the adhesive breakdown; and

drilling a second fastener aperture in the friction plug welded material.

2. The method of claim 1, wherein the friction plug welding comprises:

spinning a plug about a longitudinal axis of the plug; and

moving the spinning plug along the longitudinal axis into the enlarged aperture.

3. The method of claim 2, wherein the moving of the spinning plug comprises pushing the spinning plug along the longitudinal axis into the enlarged aperture.

4. The method of claim 2, wherein the moving of the spinning plug comprises pulling the spinning plug along the longitudinal axis into the enlarged aperture.

5. The method of claim 1, further comprising removing a portion of the friction plug welded material that projects out from the flange before the drilling of the second fastener aperture.

6. The method of claim 1, wherein the enlarging of the first fastener aperture comprises removing a damaged portion of the fan case structure.

7. The method of claim 1, wherein the enlarging of the first fastener aperture comprises removing pitted material from the fan case structure.

8. The method of claim 1, wherein the enlarging of the first fastener aperture comprises removing corroded material from the fan case structure.

9. The method of claim 1, wherein

the first fastener aperture has a first cross-sectional area; and

the second fastener aperture has a second cross-sectional area that is different the first cross-sectional area.

10. The method of claim 1, wherein

the first fastener aperture has a first cross-sectional shape; and

the second fastener aperture has a second cross-sectional shape that is different from the first cross-sectional shape.

11. The method of claim 1, wherein

the first fastener aperture extends axially through the fan case structure along a first axis; and

the second fastener aperture extends axially through the fan case structure along a second axis which is substantially co-axial with the first axis.

12. The method of claim 1, wherein the fan case structure comprises an aluminum alloy.

13. The method of claim 1, wherein the method is operable to be performed without heat treating the flange before or after the friction plug welding.

14. The method of claim 1, further comprising heat treating the flange after the friction plug welding.