WHAT IS CLAIMED IS:

1. A method for performing in situ repairs of internal components of a gas turbine engine, the method comprising:

inserting a repair tool through an access port of the gas turbine engine, the repair tool including a tip end positioned within the gas turbine engine and a material supply end positioned outside the gas turbine engine;

positioning the tip end of the repair tool adjacent to a defect of an internal component of the gas turbine engine, the defect defining a fillable volume along a portion of the internal component;

supplying liquid metal from the material supply end of the repair tool to the tip end of the repair tool through a high temperature conduit that is heated with a heating element, wherein the repair tool further includes a heating element provided in operative association with the high temperature conduit;

generating heat within the high temperature conduit via the heating element as the liquid metal is being supplied through the high temperature conduit; and

expelling the liquid metal from the tip end of the repair tool in a direction of the defect such that the fillable volume is at least partially filled with the liquid metal.

2. The method of claim 1, wherein the high temperature conduit extends lengthwise between the material supply end of the repair tool and the tip end of the repair tool, wherein supplying the liquid metal from the material supply end of the repair tool to the tip end of the repair tool comprises supplying the liquid metal through the high temperature conduit to the tip end of the repair tool.

3. The method of claim 2, wherein the high temperature conduit is formed from a ceramic material.

4. The method of claim 1, wherein the repair tool includes a nozzle positioned at or adjacent to the tip end of the repair tool, wherein expelling the liquid metal from the tip end of the repair

tool comprises expelling the liquid metal from the nozzle such that the liquid metal is directed into the fillable volume defined by the defect.

5. The method of claim 1, further comprising inserting an optical probe through the access port or an adjacent access port of the gas turbine engine, the optical probe being configured to provide a view of the defect within the gas turbine engine.

6. The method of claim 5, wherein positioning the tip end of the repair tool adjacent to the defect comprises positioning the tip end relative to the defect based on the view provided by the optical probe.

7 A method for performing in situ repairs of internal components of a gas turbine engine, the method comprising:

inserting a repair tool through an access port of the gas turbine engine, the repair tool including a tip end positioned within the gas turbine engine and a material supply end positioned outside the gas turbine engine;

positioning the tip end of the repair tool adjacent to a defect of an internal component of the gas turbine engine, the defect defining a fillable volume along a portion of the internal component;

supplying a solid filler material to the tip end of the repair tool; and

expelling the solid filler material from the tip end of the repair tool at a supersonic flow velocity such that the solid filler material is directed onto the fillable volume and adheres to a surface of the defect as the solid filler material impacts the internal component, wherein supplying the solid filler material to the tip end of the repair tool comprises supplying a pressurized mixture of gas and the filler material through a nozzle positioned at or adjacent to the tip end of the repair tool, and wherein the nozzle defines a convergent-divergent nozzle geometry.

8. The method of claim 7, wherein the solid filler material corresponds to a metallic-based solid powder material or a ceramic-based solid powder material.

9. The method of claim 7, wherein the solid filler material undergoes plastic deformation and mechanically bonds to the surface of the defect as the solid filler material impacts the internal component.

10. The method of claim 7, further comprising inserting an optical probe through the access port or an adjacent access port of the gas turbine engine, the optical probe being configured to provide a view of the defect within the gas turbine engine.

11. The method of claim 10, wherein positioning the tip end of the repair tool adjacent to the defect comprises positioning the tip end relative to the defect based on the view provided by the optical probe.