WHAT IS CLAIMED IS:

1. A vaporizer for vaporizing a multi component hydrocarbon containing liquid mixture, comprising:

a generally elongated tubular body having a first segment defining a first end and a second segment defining a second end;

a first liquid sample port connected to a liquid passage formed integrally in the first segment, where said first liquid port provides for liquid input;

a liquid channel disposed generally longitudinally along a central axis of the vaporizer and extending substantially in the direction of elongation of said tubular body, said liquid channel having a first end and a second end, said first end of said liquid channel intersecting with said liquid passage to provide a flow path for liquid from said liquid sample port therethrough along its length;

a liquid flow control element disposed in said first segment of said tubular body and configured to intersect the liquid channel;

a gap formed in and extending a radial depth inwardly toward the liquid channel from an exterior surface of the tubular body, the gap defined by upper and lower a non-parallel surfaces to alter the angle of heat radiation and improve reflective loss and disposed along the length of the liquid channel below said liquid flow control element;

a vaporizer core disposed below said gap, internal to and extending from said second end of said tubular body to said second end of said liquid channel;

a heating assembly dimensioned for insertion into the vaporizer core and sealingly securable to said tubular body, said heating assembly having a flash vaporizing heating element that vaporizes liquid introduced from said liquid channel; and

a vapor discharge outlet port formed in said tubular body in said second segment spaced from said second end of the tubular body and intersecting with said vaporizer core.

2. The vaporizer as claimed in claim 1, wherein the body is cylindrical and the first segment is an upper segment disposed above the second segment, the cylindrical body further comprising: a second liquid sample port connected to said liquid passage

formed integrally in the first segment, where said second liquid sample port provides for liquid discharge; and a thermal insulator disposed within the gap.

3. The vaporizer as claimed in claim 2, wherein the non-parallel surface of the gap is tapered flat and planar, and the liquid sample port and the second liquid sample port are orthogonally disposed relative to the other.

4. The vaporizer as claimed in claim 2 or 3, further comprising an active cooling circuit established by a liquid takeoff proximate a liquid fluid tube within said thermal insulator to minimize heat transfer from said second segment to said first segment.

5. The vaporizer as claimed in any one of claims 1 to 4, wherein the liquid sample port is disposed along an axis of the cylindrical body.

6. A vaporizer device for vaporizing a multi component hydrocarbon containing liquid mixture, comprising:

an elongated tubular body with an exterior surface;

one or more ports to the body, configured to receive a liquid sample through the body;

a channel within the body, configured to receive the liquid sample from the one or more ports;

a recessed tapered thermal isolation gap formed along the exterior surface of the body and radially surrounding the channel, the recessed tapered thermal isolation gap being configured to receive and retain a thermal insulator;

a vaporizer core disposed below the recessed tapered thermal isolation gap and extending from the end of the channel;

a heating assembly configured to vaporize the liquid sample exiting the channel, the heating assembly being affixed within the vaporizer core; and

an outlet port from the elongated tubular body, configured to output the vaporized liquid sample.

7. The device as claimed in claim 6, wherein the heating assembly includes a heating element and a metal housing enclosing the heating element.

8. The device as claimed in claim 7, wherein the heating element is enclosed within a metal sheath.

9. The device as claimed in claim 7 or 8, wherein the metal housing is at least partially enclosed by a metal mesh.

10. The device as claimed in any one of claims 6 to 9, wherein the recessed tapered thermal isolation gap is filled with an insulative material.

11. The device as claimed in claim 10, wherein the insulative material is selected from the group consisting of alumina silicate, calcium silicate, and foamed ceramics.

12. The device as claimed in any one of claims 6 to 11, wherein the recessed tapered thermal isolation gap tapers inwardly toward the channel.

13. The device as claimed in any one of claims 6 to 12, further comprising:

a liquid flow control element configured to intersect the channel to control a flow of the liquid sample entering the channel.

14. The device as claimed in any one of claims 6 to 13, wherein the heating assembly is affixed within a vaporizer core, the vaporizer core being an opening formed within the body and having a radial and axial length larger than the heating assembly thereby creating a liquid flow path from the channel to the area between the outer surface of the heating assembly and the inner surface of the body and to the outlet.

15. The device as claimed in any one of claims 6 to 14, wherein the recessed tapered thermal isolation gap includes a cooling circuit cooled by liquid takeoff from a port.

16. The device as claimed in any one of claims 6 to 15, wherein the heating assembly includes a temperature sensor configured to align with the outlet port of

the vaporizer device, the temperature sensor providing a temperature of the vaporized liquid sample at the outlet port.

17. The device as claimed in claim 16, wherein the temperature sensor is affixed within a thermowell interior and parallel to an axial length of the heater assembly.

18. The device as claimed in claim 16, wherein the temperature sensor is affixed within a thermowell formed at an angle within a protrusion from the heater assembly.

19. A method of vaporizing a multi component hydrocarbon containing liquid mixture, comprising the steps of:

receiving a liquid sample into a vaporizing device via at least one port within a body of the vaporizing device;

selectively directing the received liquid sample into a channel within the vaporizing device;

selectively directing the liquid sample within the channel through a recessed tapered thermal isolation gap defined by tapered non-parallel surfaces to improve heat reflective loss and establish a thermal isolation gap disposed between said at least one port and a vaporizer core to minimize thermal migration from the vaporizer core to the at least one port;

selectively directing the liquid sample exiting the channel into the vaporizer core, the vaporizing core having a heating assembly to flash vaporize the liquid sample; and

outputting the vaporized liquid sample from the vaporizing device through an outlet.

20. The method as claimed in claim 19, further comprising the step of:

controlling liquid flow through the first tube with a liquid flow control element.