Steady State Fluid Flow = SS

@wikipedia

Fluid flow with fluid pressure $p(t, \mathbf{r})$ is not changing in time:

(1) $$p(t, \mathbf{r}) = p(\mathbf{r})$$

This immediately leads to stationary fluid velocity $\mathbf{u}(t, \mathbf{r})$:

(2) $$\mathbf{u}(t, \mathbf{r}) = \mathbf{u}(\mathbf{r})$$

In the most general case (both reservoir and pipelines) the fluid velocity is a function of pressure and pressure gradient and can be written as:

(3) $$\mathbf{u}(t, \mathbf{r}) = F(\mathbf{r}, p, \nabla p)$$

with right side not dependent on time in stationary flow:

(4) $$\frac{\partial \mathbf{u}(t, \mathbf{r})}{\partial t} = 0$$

which leads to (2).

The fluid temperature $T(t, \mathbf{r})$ is supposed to vary slowly enough to provide quasistatic equilibrium.

This flow regime is often observed in pipeline fluid flow and reservoir fluid flows.

See also

Physics / Fluid Dynamics

[Steady State Well Flow Regime (SS)]