The fewer-than-five elements of unconventional petroleum accumulations

A previous *PGSG* page illustrated the five geological elements necessary for the generation of a conventional petroleum accumulation. This page examines the extent to which those elements are relevant to various unconventional sources of hydrocarbons. The overall observation is that the history of unconventional accumulations is simpler – it's the extraction that is more challenging.

Resource type	***Five essential, or not so essential, elements***				
Conventional accumulation	**Source**	**Migration pathway**	**Reservoir**	**Seal**	**Trap**
Tar sands	**Source**	**Migration pathway**	**Reservoir**	**Accumulation is now seal**	**Trap no longer relevant**
Shale gas	**Source is impermeable reservoir; no migration took place**			**Reservoir is seal**	**Irrelevant**
Coalbed methane					
Tight Oil	**Reservoir is either impermeable source or low-permeability post-migration reservoir**			**Reservoir is seal**	**Irrelevant**
Tight gas					
Oil Shale	**Resource is still in source state; no migration to reservoir has happened**			**Irrelevant**	**Irrelevant**
Methane hydrate	**Comparatively shallow source**		**Sediment**	**Clathrate is seal**	**Thermodynamic trap**
Coal gasification	**Irrelevant**	**Irrelevant**	**Irrelevant**	**Irrelevant**	**Irrelevant**