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| Title: Equation of State for a Greenhouse Gas Stream from a coal-fired power station  Project Leader: | | Demonstration Project:  CTSCo |
| Project Number:  Status: Under Development | Commencement: 2018  Completion: | Total Budget:  ANLEC R&D Contribution: |

***The Context***

With future greenhouse gases (GHG) injection of 60,000 tonnes/year, for 3 years, CTSCo wishes to predict the movement of GHG Stream through reservoir simulators. This project is a simulation modelling exercise for the purpose of predicting the subsurface extent and impact of injection a GHG Stream derived from a coal-fired power station.

***Unknowns***

* Understanding the implications, particularly if going to industrial scale projects, of:
  + thermal cooling at it would reduce the BHP for inducing fractures which could limit injectivity
  + near wellbore dehydration, although this is less likely to be a problem in low salinity groundwater
  + etc.
* Can these be replicated with Equation of State (EoS) modelling?
* How applicable is it to CTSCo projects? Particularly given the differences in water salinity between Canada and Australia.

***Research Objective***

This project aims to use the most appropriate Equations of State for the Proponents tNavigator reservoir simulation software for the purpose of predicting the subsurface extent and impact of injection a GHG Stream derived from a coal-fired power station.

***New Knowledge***

* Understanding of the impact of GHG stream impurities on the dynamic modelling outcomes for geosequestration.
* Relevant equations of state usable for future dynamic modelling that incorporate the impact of GHG stream impurities (for use within tNavigator).

***Work Program***

* Literature review of currently available EoS relevant to the Greenhouse Gas Stream composition derived from a PCC attached to a coal-fired power station
* Matching the Peng-Robinson EoS with other EoS
* Testing and validating the CO2-impurity EoS
* Develop software plug-ins that allow implementation of EoS into commercial modelling software suites tNavigator™

***Milestones***

### Milestone 1: Literature review

### Milestone 2: Matching Peng-Robinson EoS with other EoS

### Milestone 3: Workflow for applying the CO2-impurity EoS in tNavigator

### Milestone 4: Final Report