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NSW CSG Well Abandonment

Presented by Rohan Richardson, well abandonment and Ann Stewart, site rehabilitation
to the Santos Community Committee – Upper Hunter,
Tuesday, March 27, 2012.

Abandoning a CSG Well in NSW

NSW CSG wells are abandoned in accordance with the following:

- **State Regulation**: Schedule of Onshore Petroleum Exploration and Production Safety Requirements, August 1992;
- **Environmental guidelines**: Petroleum Licence conditions and Review of Environmental Factors, REF's for each site under Part 5 of the petroleum act (when in the E&A phase);
- **NSW Well Integrity Code of Practice** (currently under review with government chief scientists);
- **Industry best practice and guidelines**, example: API Recommended Practice

The abandonment concepts detailed in these documents are common to most abandonments around the world

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Abandoning a CSG well in NSW

Excerpts from the NSW Well Integrity Code of Practice:

The requisite outcomes of well abandonment are:

- To achieve aquifer zone and coal seam isolation that existed before the well was drilled and constructed

- A well must not be abandoned without Departmental approval

This includes submission of a detailed work programme that complies with the regulations detailed on the previous slide

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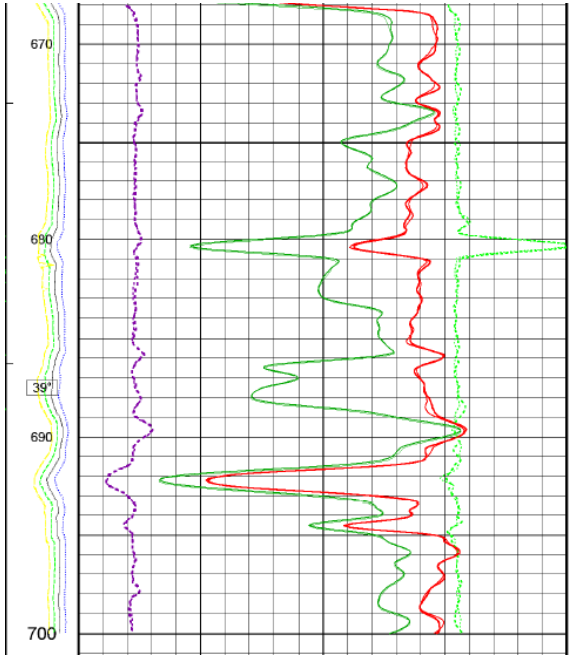
Knowledge of Sub Surface Rocks

During exploration drilling, data can be collected by means of coring, logging, testing and through cuttings analysis, to determine the characteristics of the formations drilled.

These characteristics include:

- lithology (type of rock) and location of aquifers
- Formation characteristics, including:
  - Porosity
  - permeability
  - rock density,

  which can give compressive rock strength data



This data can then be used in the design of the well abandonment.

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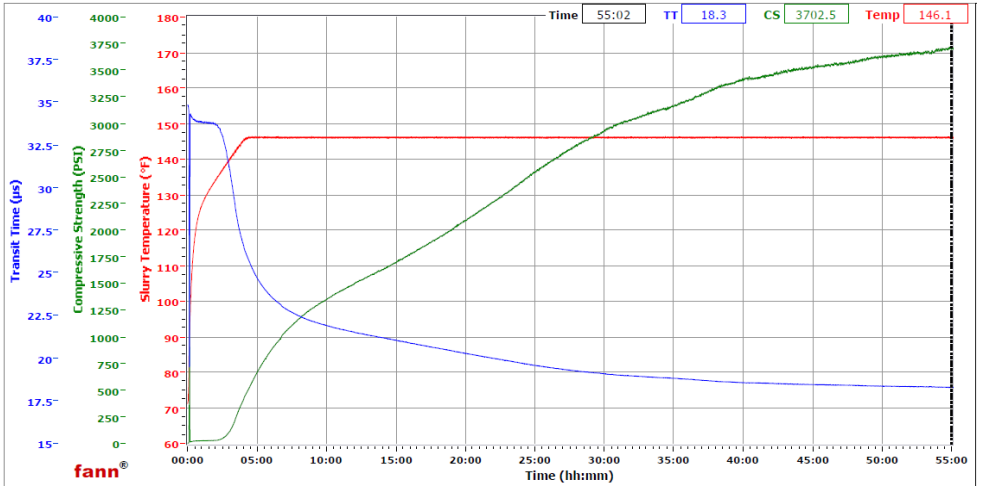
Cement Design

The design criteria of a NSW CSG well abandonment is:

To fill the well with a naturally occurring, non corrosive, high compressive strength material when compared to neighbouring rock, that wont degrade, has very low permeability and porosity and can be set in place in a fluid state to take up all areas of the wellbore isolating aquifers and coal seams when set.

- Cement is a naturally occurring material and in the design conditions, won't degrade
- The cement used is a high quality construction grade cement
- It has a high PH, which in a NSW CSG well environment is non corrosive



- It is designed to be pumped in a fluid state and develop high compressive strengths quickly
- Cement has very low porosity and permeability

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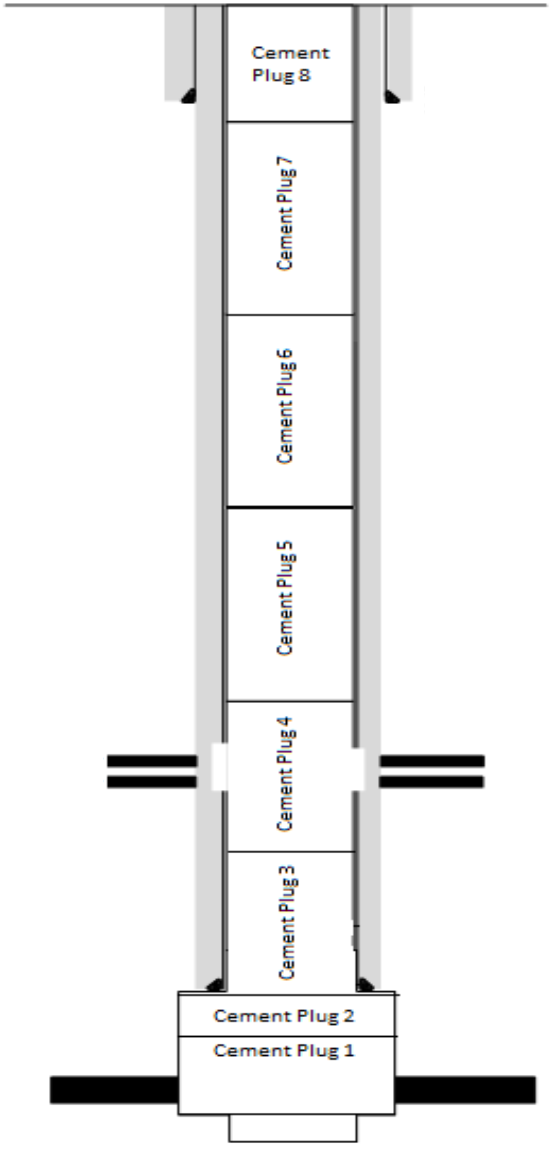
The Process



- An abandonment includes filling the entire wellbore from bottom to surface with cement in cement 'plug' stages.
- All open hole 'plugs' are left to set and tagged to confirm placement before the next one is pumped.
- Once a cement 'plug' top is inside casing, it is left to set and tagged to confirm placement and pressure tested to confirm isolation.
- Cement 'plugs' are then pumped one by one to surface.

The process of filling the well from bottom to surface is a requirement set by the NSW regulators and is more stringent then Australian offshore standards.

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Thank You

Questions ?

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