

Cluff Natural Resources – Firth of Forth UCG Project

Cluff Natural Resources has a small number of underground coal gasification (UCG) licences situated offshore in the Firth of Forth. These licences, issued by The Coal Authority, are conditional licences which means they do not allow any activities to proceed until land access has been agreed, planning permission has been granted and all required environmental and HSE permits are in place.

The UCG process is not, and **does not use the process of, hydraulic fracturing or ‘fracking’**. Fundamentally the UCG process is a controlled series of chemical reactions that results in the release of a range of commercially important industrial gases, including methane, hydrogen, carbon monoxide and carbon dioxide.

Cluff Natural Resources last week announced a round of fundraising with institutional and private investors. This investment has been predicated upon the Scottish government’s exclusion of UCG from the moratorium on onshore activities..

History of UCG

UCG was first proposed by Sir William Siemens in 1868, however it was not until the 1950s that the first UK project was successfully undertaken by the National Coal Board at Newman Spinney in County Durham. However, commercial issues and pressure from those with vested interests in mining and the established surface gasification (ie town gas) industries prevented further development of UCG in the UK.

Worldwide, there have been more than 100 UCG projects since the first demonstration of the technology in the USSR during the 1930s. These have included a number of long-running commercial enterprises in the former Soviet Union, more than 30 R&D trials funded by the EU and US governments in the 1980s, and recently a wave of pre-commercialisation production tests undertaken by industry in Australia, South Africa, Canada, New Zealand and China. With a few exceptions these projects have reported no unexpected or adverse environmental or health and safety outcomes - the clear message being that there are **no inherent risks associated with the process or the technologies employed in UCG**, so long as appropriate site selection and process-management procedures are in place.

This was also the view reached following a decade-long (1999-2009) study of UCG and its potential application in the UK, which was commissioned by the UK Government and is documented in the series of reports detailed below.

YEAR	Title	Reference	Contributors
1999	DTI Energy Paper 67 – Cleaner Coal Technologies		DTI
2001	Review of Underground Coal Gasification Technological Advancements	Report No. Coal R211 DTI/Pub URN 01/1041	BGS Nottingham University Wardell Armstrong
2004	UK Coal Resource for New Exploitation Technologies	Report No. COAL R271 DTI Pub URN 04/1879	BGS Nottingham University Imperial College London
2004	Review of Environmental Issues of Underground Coal Gasification	Report No. COAL R272 DTI Pub URN 04/1880	University of Liege WS Atkins FWS consultants
2004	Review of the Feasibility of Underground Coal Gasification in the UK		DTI
2006	Creating the Coal Mine of the 21 st Century – The Feasibility of UCG under the Firth of Forth	Report No. COAL R304 DTI Pub URN 06/942	Heriot-Watt University
2009	Development of Underground Coal Gasification for Power Generation	DECC Pub URN 09D/679	Cranfield University

It should be noted that this evidence base was compiled independently, at significant cost to the taxpayer, in the complete absence of a UK-based UCG industry and at a time when no UCG licences had been issued. It is therefore not influenced by any vested commercial interests. All reports listed above are available online or directly from DECC and are key documents for anyone who wishes to understand the UCG process.

Cluff's Proposed Project

Cluff Natural Resources' proposed UCG project in the Firth of Forth follows on from the DTI's 2006 report, 'Creating the Coalmine of the 21st Century', and will involve the operation of a UCG production test in the Firth of Forth. This will be a **time-limited** operation comprising 2 or 3 wells directionally drilled from an industrialised location onshore to coals located offshore. The test will collect the engineering data that is required to design a fully commercial operation in the future. On completion, the production test will be decommissioned and a period of post-closure monitoring undertaken to demonstrate the environmental performance of the test panel.

Although UCG has not been undertaken offshore previously, the actual location of the gasifier is irrelevant in terms of the well design and operational procedures being employed. More important in terms of risk mitigation is that the gasifier will be located at a depth of approximately 1000m where the groundwater is saline and therefore unsuitable for abstraction for potable or agricultural supplies.

Cluff is committed to carrying out a full environmental impact assessment (EIA), including a public health impact assessment, to support the planning application for the proposed production test. As part of that process Cluff continues to evaluate a number of potential sites that may be suitable for hosting the production test.

In order to support the EIA a number of public engagement sessions will be held at various stages of the Planning Application process. These will aim to give those in the community sufficient information, via access to detailed plans and one-on-one access to experts, such that they can have a fully informed view of the project and then constructively input into the proposals. These events will be widely advertised via the relevant community councils, local media and at public locations throughout the communities involved.

Following the production test any future commercial development will require a further planning application and a new environmental impact assessment.

Stuart Haszeldine, Professor of Carbon Capture and Storage at the University of Edinburgh, recently stated:

“CNR’s offshore deep UCG is a bold and innovative proposal, which could help to regain energy security and value through low-carbon production of fossil fuel. Domestic coal resources exist which are sufficient to supply many decades of secure energy production and feedstock. But those resources will remain inaccessible until new extraction technology is deployed such as UCG, and unless the produced carbon is captured after use.

“Fuel and feedstock extracted from coal by underground gasification will be much cleaner than importing coal because most of the engineering occurs deep below ground offshore. Underground gasification will have less impact on the public than other forms of unconventional gas extraction.”

Economic benefits of UCG for Scotland

UCG has the potential to provide significant benefits to the Scottish economy. Establishment of a UCG industry will create new employment opportunities with skills requirements similar to other industries currently in decline in Scotland, including coal mining, oil & gas and the petrochemical industries.

The Longannet closure and the previous closure of the Cockerhills power plant will mean that a third of Scotland's baseload electricity generating capacity will have been lost over a five-year period, with no comparative replacement plant being proposed. Given there will be no new nuclear power stations in Scotland it is important that new gas (CCGT) plants are encouraged. CNR firmly believes that offshore UCG can play a leading role in supplying their future fuel needs.