

1 March 2011

## **Cougar Energy challenges Queensland Government shut down - Independent Scientific Panel Report disputed**

**Cougar Energy Limited (ASX: CXY)** advises that it is challenging the Queensland Government's proposal to halt the Company's underground coal gasification (UCG) activities at Kingaroy in Queensland.

Yesterday the Company lodged a submission with the Queensland Government's Department of Environment and Resource Management (DERM) which sets out several grounds as to why the proposed orders should not be made, including:

- The severity of the response proposed by DERM (shutting down an entire mining operation) far exceeds, and is completely disproportionate to, the nature of the grounds, facts and circumstances identified by DERM in its Notice of Proposed Action.
- The requirements of procedural fairness and jurisdictional limits of the Queensland Environmental Protection Act have not been adhered to.
- The need for the Government-appointed Independent Scientific Panel to appropriately review all of the Cougar Energy reports submitted under three Environmental Evaluation Notices to DERM (17 reports totalling more than 650 pages).

The Cougar Energy submission includes a response by the Company to the Summary Report of the Queensland Government appointed Independent Scientific Panel which was published on the DERM website on 28 January 2011. A copy of the Company's response is also attached to this ASX announcement.

"Cougar Energy believes that DERM's proposed amendment to the existing Environmental Authority is flawed and invalid, and relies on incorrect and flawed statements of the Queensland Government's Independent Scientific Panel," Cougar Energy Chairman Malcolm McAully said.

Mr McAully commented: "It must be remembered that Cougar Energy's Kingaroy project has never presented any danger to human health, drinking water, livestock nor farming activities in the region," he said.

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## APPENDIX - A

**REPORT OF INDEPENDENT SCIENTIFIC PANEL (ISP) ON COUGAR ENERGY  
LIMITED'S UNDERGROUND COAL GASIFICATION TRIAL PROJECT AT  
KINGAROY, QUEENSLAND**

(as published on the Queensland Government Department of Environment and  
Resource Management (DERM) website on 28 January 2011)

**RESPONSE BY COUGAR ENERGY LTD**

**28 February 2011**

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## 1. SUMMARY

The Report of the ISP contains a body of statements which Cougar Energy considers to be in error by fact or by omission of information, or alternatively are disputed on technical grounds.

Although the ISP Report is critical of the reports submitted under the Environmental Evaluation Notices by Cougar Energy, there is no technical discussion of these reports in the ISP Report.

The ISP Report is also a selective compilation of confidential reports prepared by the ISP. No reasoning is provided as to why parts of these reports remain confidential. Cougar Energy believes that full transparency and disclosure is in the interests of all stakeholders, and a failure to provide such transparency and disclosure seriously prejudices Cougar Energy's rights to be treated fairly.

In particular, the ISP Report:

- Contains two incorrect statements of Cougar Energy's BTEX test results, both detrimental to the Company's position;
- Does not refer to the Company's findings, based on a technical evaluation which was accepted by DERM, that ruled out an underground explosion;
- Does not refer to the results from the Company's 8 new monitoring wells within the Pilot Plant area, only one of which recorded any BTEX, and then within drinking water guidelines;
- Refers to the hydrogeological complexity of the site, when any impact of the casing break was a result of possible air flow not water flow;
- Incorrectly states the Company's position on in-house technical capability;
- Makes no reference to the Risk Management procedures, both past and proposed, set out in the Company's Environmental Evaluation reports (some prepared in collaboration with independent experts);
- Provided no opportunity for the Company to discuss any technical issues being raised by the ISP.

Prior to analysing the Report of the ISP, it is important to repeat and highlight the following facts which are known to DERM and have not been disputed by it:

- Cougar Energy's Kingaroy project has presented **no** danger to human health, drinking water, livestock, or to other farming activities.
- Cougar Energy's Kingaroy project has **not** spread any poisons or cancer-causing agents into community groundwater supplies at Kingaroy.

These conclusions are supported by the Company's test results and those undertaken by DERM in July and August 2010.

None of the water bores outside the Company's pilot plant and used by local landowners for extracting saline water (unfit for human consumption) have ever measured any detectable levels of hydrocarbons.

The following comments place the issues surrounding the Kingaroy Pilot Test in context.

- Only two isolated and transitory readings of 2 parts per billion of benzene were measured in one monitoring bore in the pilot plant area in June 2010
- The Company has since tested more than 300 water samples from bores inside and outside the pilot plant area. **None** of these results have shown any detections exceeding the Australian Drinking Water Guidelines (ADWG).
- Other resource companies have recently reported benzene levels of up to 3 and 100 parts per billion respectively, which have been treated as "trace levels of no concern to health" by the Queensland Government.

In summary, the ISP Report makes a range of unsubstantiated statements, mostly critical of Cougar Energy, without providing the technical basis by which they could be addressed. In the responses below, the Company presents the facts behind the complex technical issues involved, so that a fair assessment can be made of the Kingaroy UCG pilot trial.

To the extent that DERM has relied on the conclusions and recommendations of the ISP which:

- Are not properly based on fact and technical information,
- Are not within the expertise or legitimate scope of the ISP, and
- Were formed without providing Cougar Energy with a right to see all the reports, respond to prejudicial allegations against the company within them, or procedural fairness,

it is Cougar Energy's view that DERM's proposed actions in relation to the Kingaroy trial should be reversed.

## 2. BACKGROUND

On 28 January 2011, DERM released a Report dated 24 January 2011, attributed to the Independent Scientific Panel on Underground Coal Gasification ("ISP") entitled "*Summary of*

*considerations and recommendations on the Environmental Evaluations of Cougar Energy*". The ISP Report was quoted as being supported by a range of reports received from the ISP "following various stages of the EE process".

The ISP Report discusses some matters outside the scope of the Environmental Evaluations by Cougar Energy, such as the interaction between UCG and CSG operations (which is not relevant to the Kingaroy site), and a meeting between Cougar Energy staff and the ISP prior to the Environmental Evaluations. Regrettably there is little technical commentary on the Company's reports, which limits the capacity for a more detailed scrutiny of the basis behind some of the opinions offered in the report.

The purpose of this document is to:

- (a) identify and correct errors contained in the ISP Report (Section 3), and
- (b) to rebut comments made in the Report which may have influenced DERM's assessment of the Environmental Evaluation reports submitted by the Company (Section 4), and its decision not to allow re-ignition of the Pilot Plant trial (Section 5).

### **3. COUGAR ENERGY ENVIRONMENTAL EVALUATION REPORTS**

The following list details the reports submitted by the Company in response to three Environmental Evaluation notices issued by DERM.

- Report of 16 August 2010 ("original environmental audit")
- Report of 24 September 2010 ("T5037 gas monitoring results report")
- Report of 1 October 2010 ("casing break report")
- Report of 11 October 2010 ("T5058 monitoring results report")
- Reports of 11 October & 10 November 2010 ("interim status report")
- Report of 15 October 2010 ("risk management plans")
- Report of 10 November 2010 ("groundwater monitoring results report")
- Report of 10 November 2010 ("monthly update of T5037 gas monitoring results report")
- Report of 10 November 2010 ("monitoring network report")
- Report of 17 November 2010 ("groundwater monitoring results report")
- Report of 10 December 2010 ("hydrogeological report")
- Report of 10 December 2010 ("T5037/38 benzene/toluene sources report")
- Report of 10 December 2010 ("risk management report")
- Report of 10 December 2010 ("monthly update of T5037 gas monitoring results report")
- Report of 10 December 2010 ("response to additional information report")

- Report of 10 December 2010 (“audit report”)

These reports reflect extensive man hours and technical expertise provided by both Cougar Energy and its advisers. However there is no technical discussion of these reports in the ISP Report to support the Report’s highly prejudicial claims and recommendations against Cougar Energy.

## 4. ERRORS IN ISP REPORT

Statements	Facts
<b>(a) Section 2.1</b> - <i>“Each bore recorded one reading less than stock water limits but greater than drinking water limits”</i>	One bore recorded two transient readings (2ppb benzene) above AWDL guidelines, the other did not exceed AWDL for either benzene or toluene. Furthermore there is no trigger limit recommended for livestock drinking water for benzene or toluene by the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000).
<b>(b) Section 2.1</b> – <i>“a benzene concentration of 45 micrograms per litre was found in borehole T5058. This is above the trigger level of 1 microgram per litre.”</i>	This bore was drilled into the coal seam adjacent to the gasification zone, and was not part of the upper aquifer monitoring system. The trigger level for benzene in the coal seam is 950 microgram per litre (950ppb), hence the statement is incorrect.
<b>(c) Section 2.3</b> – <i>“The fact that the possible existence of an explosion has yet to be confirmed or ruled out, means that corrective measures have not been put in place to prevent the recurrence of this type of malfunction.”</i>	The possibility of an explosion was rejected in Cougar Energy’s Report of 1 October 2010 (“casing break report”). Under a Section heading entitled “Gas Explosion” the response concluded after technical discussion that “..... there could not have been a combustible gas present underground and hence an explosion is not possible.” The report containing this response has been accepted by DERM. Measures to ensure that a gas explosion would not occur were already in place prior to the ignition.

<p><b>(d) Section 2.1</b> – <i>“It is unknown whether pollution of the soil/regolith on the path between the chamber inlet and the bores occurred.”</i></p>	<p>All three of these statements make no reference to the extensive additional work that Cougar Energy has undertaken to verify that there is no evidence of contamination of the aquifer system within the vicinity of the pilot plant, and most certainly none outside this area. It is not evident that the ISP report has reviewed this data in drawing up its conclusions and recommendations in relation to the site.</p> <p>An additional monitoring program was proposed in Cougar Energy’s Report of 16 August 2010, was discussed in detail with DERM and was required under the Environmental Evaluation Notice of 16 September 2010. Monitoring and reporting of results from these new bores was submitted on 10 December and reported intermittent measurement of benzene at the AWDG level at only one of these bores, and none above the level of detection in all other bores i.e. no exceedances of the ADWG have occurred despite a monitoring regime lasting significantly longer than that DERM has required.</p>
<p><b>(e) Section 3.3, Recommendation 3</b> – <i>“It is not too late to improve the water monitoring and it is recommended that this be done forthwith at all three sites.”</i></p>	
<p><b>(f)Section 3.3, Recommendation 6</b> – <i>“.....the ISP recommends that additional monitoring be put in place immediately.” “These bores should be sampled at least fortnightly..... .” “If no exceedance occurs after 6 weeks monitoring could be reduced to monthly.”</i></p>	

## 5. MATTERS IN CONTENTION

Statements	Response
<p><b>(a)Section 2.1</b> – “Acquisition of better data beforehand would have revealed the complexities of the hydrogeological situation before the burn.”</p>	<p>Cougar Energy planned the pilot burn on the basis of extensive site characterization at the pilot site. This involved extensive drilling with the data being reviewed by geologists, its technology provider Ergo Exergy, and by consultant hydrogeologists. Subsequently a program of in-situ testing of the profile using both pump and air linkage testing was carried out and the results analysed extensively.</p> <p>The basic conditions consisting of a high permeability coal seam, a low permeability aquitard system and a near surface discontinuous aquifer system of variable (but not high) permeability, and unsuitability for drinking water, meet the requirements for a potential UCG project.</p>
<p><b>(b)Section 2.2</b> – In relation to Cougar Energy’s position on staffing, the ISP report states “...they assert, they do not need a lot of in-house technical capability and can rely on consultants as required.”</p>	<p>Cougar Energy in fact made it clear that <i>in the first instance</i> it was relying on the long UCG experience of Ergo Exergy’s personnel, as established for the initial Chinchilla test burn (1999-2002), and this would be followed by a process of technology transfer to its own staff, for which key appointments had already been made.</p> <p>Technology transfer is the model by which Ergo Exergy operates with its clients which include Eskom (South African government power generation and supply utility) and Solid Energy (government owned New Zealand coal company).</p>

<p><b>(c) Section 2.2</b> – <i>“The documentation for the Environmental Evaluations and monitoring information provided by Cougar Energy has generally lacked detail and been less-than-clear in explanation with some self-contradictory comments and other comments that were difficult to interpret. In some cases, specific requests were made and either overlooked or misinterpreted.”</i></p>	<p>Cougar Energy has responded to all of the requests for information made in the Environmental Evaluation Notices, and in response to supplementary requests for information following the “casing break report” of 1 October. This report was accepted by DERM.</p> <p>Requests by the Company to DERM to meet with its technical advisers to clarify any outstanding and misinterpreted issues were rejected.</p> <p>DERM did not seek any consultation with Cougar Energy after the voluminous amount of reports were submitted on 10 December 2010.</p>
<p><b>(d) Section 2.3</b> – <i>“Water and gas then escaped through the compromised infrastructure and were detected in bore down the gradient of groundwater flows.”</i></p>	<p>This comment suggests a lack of appreciation of the possible transport mechanism explained in Cougar Energy’s reports, being a result of air injection into well P4 which escaped through the casing break. There is no evidence of underground water flow from the casing break being detected in monitoring bores. Other causes of the detected levels cannot be ruled out.</p>
<p><b>(e) Section 2.3</b> – <i>“Gas continued to appear in one of the bores for some time after the event indicating the compromise did not self anneal.”</i></p>	<p>The gas coming from T5037 was possibly driven by a reservoir of air injected into well P4 and stored above the aquitard, which continued to discharge for some time after air injection stopped. Photographic evidence supplied in the Environmental Evaluation of 17 July 2010 showed detail of the casing break - clear evidence that self annealing could not occur.</p>
<p><b>(f) Statement in Section 2.3</b> – <i>“...the additional potential of an underground explosion, having released contaminated waters into the groundwater.”</i></p>	<p>The possibility of an underground gas explosion has been rejected - see 3(c) above. There is no evidence that any contaminated water was released as a result of the casing break.</p>

<p><b>(g) Section 2.3</b> – <i>“...the compromised infrastructure (ie the casing break) remains in the condition it was when the incident occurred.”</i></p>	<p>Under the Environmental Protection Order issued by DERM on 30 July 2010, Cougar Energy was not permitted to repair or seal the section of broken casing in P4. This is still the case. Once permission is given, the Company will plug and abandon the well.</p>
<p><b>(h) Section 2.5</b> – <i>“The local hydrogeology indicates considerable underground complexity and potential for preferential flow of groundwater.”</i></p> <p><i>“It is unclear why the trial was not located in a more simple hydrogeological setting, which was available not too distant from the existing site.”</i></p> <p><i>“The complexity of the aquifers and strata surrounding the test chamber are not competent to contain potential...”</i></p>	<p>These comments all imply that the site was hydrogeologically unsuitable for the UCG pilot trial. Although not simple, the Kingaroy hydrogeology is not particularly complex. The multiple strata are above the aquitard and the coal measures, not surrounding the coal seam, and the geology is consistent across the site.</p> <p>Any potential impacts from the incident of the casing break were related to air flow not groundwater flow, hence it is unrealistic to draw any conclusion about hydrogeological aspects of the site in this regard.</p> <p>The merits of any potential alternate site at a nearby location as suggested by the ISP cannot be commented upon as no such information or technical justification was provided to Cougar Energy.</p>
<p><b>(i) Section 2.5</b> – <i>“...given the environmental, anthropogenic and political consequences of a malfunction such as happened.”</i></p>	<p>There were no environmental and health consequences of the incident. The political consequences are open to conjecture and should not be in the scope of the ISP Report and this review.</p>
<p><b>(j) Section 3.3 – Recommendation 4.</b> <i>“Monitoring at entry and exit points from the chamber should be standard for all trials to ensure that any leaks are immediately detected.”</i></p>	<p>Monitoring of gas flow at entry and exit points from each well were obtained by Cougar Energy and provided to DERM in the relevant Environmental Evaluation reports.</p>

## 6. REASONS FOR NOT REIGNITING THE TRIAL

Recommendation 8 in the ISP Report concludes *“that the Cougar Energy trial not be reignited”*. This recommendation is based on the following statements, each of which is refuted below.

Statements	Response
<p><b>(a)</b> <i>“... it is very likely that the incident resulted in a compromise to infrastructure allowing gas and water to escape from the chamber into the surrounding environment.....”</i></p>	<p>The Environmental Evaluations provide no evidence that water escaped from the chamber, with the likely transport mechanism being air injected into the well. The well in question is proposed to be plugged and abandoned, not re-used as seems to be implied in the Report. Mitigation measures for use of the newly installed replacement wells were presented by the Company in the relevant Environmental Evaluation Reports which were accepted by DERM.</p>
<p><b>(b)</b> <i>“Further, the Environmental Evaluation report indicated that Cougar Energy did not act sufficiently rapidly to shut down the facility when the changes to infrastructure were first observed.”</i></p>	<p>All air injection to the process was stopped as soon as the casing break was identified. The response to Item 4 in the Environmental Evaluation dated 17 November 2010 describes in detail the process for assessing the evidence relating to the observed casing movement. Casing movements vertically are to be expected due to thermal expansion, and need not be an indicator of a casing break.</p>
<p><b>(c)</b> <i>“This indicates insufficient risk management protocol for the site and/or insufficient sensitivity of controls.”</i></p>	<p>This opinion is refuted for the reasons given in (b) above. In addition, the Company has provided to DERM a detailed review by independent consultants of risk management protocols as part of the response to Requirement 25 of the Environmental Evaluation dated 16 September 2010, to which no reference has been made.</p>

<p><b>(d)</b> <i>“Further, operating in such a hydrogeologically complex site should only proceed after it is shown to be acceptable on the basis of significantly better base line information</i></p>	<p>The issue of “hydrogeological complexity” is discussed in detail under item 4 (h) above. The hydrogeology of the site played no part in any impact of the casing break, as any flow from the production well was likely due to air flow not water flow, and which occurred well above the coal seam being gasified, and the intermediate aquifer system.</p> <p>The suitability of the site has been confirmed to the Company by independent evaluation. Moreover the discontinuous nature and low permeability of the upper aquifer system at the pilot plant site provides additional protection to the overall groundwater system.</p>
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## 7. CONCLUSION

In response to the Environmental Evaluation Notices issued by DERM, Cougar Energy has submitted 17 reports totalling more than 650 pages covering highly complex technical issues, all of which were provided on time against extremely strict timelines. These reports reviewed and analysed the incident of a break in the casing of one production well. Observations indicate that the only potential impact of this incident was evidence of two isolated readings of 2 ppb (parts per billion) in one monitoring bore at the edge of the pilot plant area, which subsequently has recorded levels below the detection limit for more than 6 months. There were no detections of BTEX values in any existing water bores surrounding the test site.

With this background, it is disappointing in the extreme to find the Report of the ISP containing errors of fact and apparently giving little or no consideration to the Company’s reports, while at the same time being critical Cougar Energy’s responses.

This document presents Cougar Energy’s factual responses to the issues raised in the Report. In determining what action to take at the Kingaroy site, it is the Company’s belief that DERM cannot rely on the conclusions and recommendations from the ISP panel which are not properly based on facts and have been formed through an unfair process.