

# SIGMA<sup>3</sup>

March 6, 2017

The Honorable Justice Rachel Pepper  
Hydraulic Fracturing Taskforce  
GPO Box 4396  
Darwin, NT 0801, Australia

**Re: HYDRAULIC FRACTURING INQUIRY – INVITATION TO PRESENT AT FORMAL HEARINGS**

Dear Honorable Justice Pepper,

Thank you for the invitation to present at the formal hearings, however; due previously scheduled business meetings, I cannot be in attendance. A copy of the formal invite letter is attached.

Our company, Sigma Cubed, Inc, (“*Sigma*<sup>3</sup>”) is an international engineering service company that provides integrated engineering, geological and geophysical services to optimize the development of unconventional oil and natural gas resources. Our areas of expertise include completion engineering, hydraulic fracture engineering and reservoir characterization. We also provide borehole seismic imaging services including fracture mapping and borehole seismic imaging (“microseismic”). The synergy of these combined services (engineering, geology, geophysics) results in provision of the best possible value in terms of reservoir evaluation, completion optimization and ultimately ROI for our clients. Additional information about Sigma Cubed can be found at the following link: <http://www.sigmacubed.com/>

Since its inception in 1989, *Sigma*<sup>3</sup> engineers have designed and successfully pumped over 20,000 hydraulic fracture stages around the world without incident. *Sigma*<sup>3</sup> engineers also provided the frac design and onsite supervision for the hydraulic fracture operations performed on the Shenandoah 1-A during 2011. The Shenandoah 1-A was the first well in the Beetaloo Basin, Northern Territory, that successfully had gas to surface from the Mid Velkerri formation. This is the same formation recently completed in the Origin Amungee NW 1-H horizontal well.

As with any field operation, there are always risks involved that could lead to the mechanical failure of well. To deny that these risks do not exist is foolish, however; with properly engineered wellbore design and the engineered handling of produced wellbore fluids, hydraulic fracture stimulation is a safe, environmentally friendly and economical means for the extraction of oil and natural gas reserves.

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As with any publicly debated issue, there will always be two sides presented, however; one must truly take a close look at the facts, then make a decision. You must weigh the potential economic benefit versus the any potential negative aspects. In the United States, since the late 1940<sup>'s</sup>, there have been 100<sup>'s</sup> of thousands of hydraulic fracture stages pumped with only a relative few number of negative incidents occurring.

There is little that anyone can do to change the minds of the people at this stage of the game. Their mind is already made up, however; I would highly recommend and encourage the panel to examine the facts and truly weigh the potential economic benefit versus any potential negatives that may or may not occur.

Please give me a call if you have any questions or comments regarding this matter.

Sincerely,



Digitally signed by Denny Migl P.E.  
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