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The Secretary  
Senate ECITA References Committee  
Parliament House  
Canberra ACT 2600

Dear Sir/Madam,

**Re: Submission to the Senate Inquiry into Environmental Regulation of Uranium Mining by Mr Bruce Thompson (Friends of the Earth).**

It has come to my attention that Mr Bruce Thompson, the National Nuclear Campaigner for Friends of the Earth, has presented a submission to the Senate Inquiry into Environmental Regulation of Uranium Mining. As I have been personally criticised in Mr Thompson's submission, I consider it necessary to write this letter to clarify and correct a number of issues.

Mr Thompson's submission seems to have misunderstood the terms of reference that are clearly stated for the Inquiry, and instead taken the opportunity to request an unreasonable set of restrictions and regulations designed for the sole purpose of stopping uranium mining in Australia. The submission contains numerous factual and scientific errors and uses emotive language (together with an excessive use of bold text and capital letters) to support his case.

Of particular concern in Mr Thompson's submission are the strong allegations suggesting that my involvement with the Honeymoon Uranium Project was not independent. These allegations were raised in an anonymous "independent review" that was appended to the main submission. The "independent review" is dated variously as December 2002 and December 2001.

On page 2 of the "independent review" the tone adopted by the author in describing me as "*a pro-uranium Ph.D. student with limited industry experience whose academic study was facilitated by the company Southern Cross Resources*" comes across as being very negative. This statement subtly implies that contributions to Australian science by young scientists are of less value than those made by older, more established scientists. The statement does not seem to support a fresh look by someone with new ideas. Since the "independent review" is anonymous, it is unclear what industrial experience in the uranium mining industry the author has. It is interesting to note that the references cited in the "independent review" (and curiously never actually specifically referenced) are written by Gavin Mudd. At the time these

two references were published, Mr Mudd was himself a Ph.D. student, with, to my knowledge, no experience working for, or in conjunction with uranium mining companies. I am unsure as to why I have been identified as being “pro-uranium”. The fact that my findings were apparently contrary to those that the Friends of the Earth wanted to hear has resulted in them trying to discredit my contributions.

It is true that I have only “*limited industry experience*” since I was a full-time student at the time I was approached by Environment Australia to conduct the work and I have never worked for a mining company. However, if I was to have had extensive industry experience in working for a uranium mining company, it is doubtful that the Friends of the Earth would have considered me a person appropriate for making an independent judgement. I would like to point out that I was approached by Environment Australia to conduct a specific task completely independent of Southern Cross Resources. Given my previous recognition in geochemistry at ISL uranium operations, Environment Australia considered me appropriate for the task. I was told by Environment Australia that the fact that I had never worked for a uranium company was a particular reason in me being approached.

It is also true that my “*academic study was facilitated by the company Southern Cross Resources*” insofar as they allowed me independent access and sampling of groundwater monitoring bores as part of my Ph.D. research. Common courtesy (and indeed the law) dictates that permission be sought from a company before entering their workplace. Southern Cross Resources provided no financial backing whatsoever for the collection of the samples, the analysis of the samples or the interpretation of the results. They did support my research by allowing me to stay at the Honeymoon FLT camp on two occasions (4 nights total) and they also allowed me to have meals in the camp mess. I am under the impression that university research students conducting fieldwork on mining company tenements are often afforded such assistance. Southern Cross Resources also provided me with a limited amount of analytical data from various ISL process points that could not be collected during my fieldwork. The source of this data has been clearly acknowledged where used. At no stage have I ever received any money, gifts or favours from Southern Cross Resources.

On page 5 of the “independent review” the author alleges “*There are serious issues over the independence of his work*”. The author obviously has problems with a company allowing an independent scientist to independently collect, analyse and interpret the results from samples. It would not have been possible to conduct my study without the knowledge and assistance of Southern Cross Resources. It is worthwhile noting that the two references by Mr Mudd are a curious oddity in modern scientific publications in that they are completely devoid of new data. The papers do not contain any new analytical data, nor do they contain any new interpretations of existing data. The papers simply compile and re-present previously published data that have been gleaned from a variety of different sources.

On page 5 the author also claims that “*There appears to be no international scientific review of Pirlo’s work, i.e. he has no published work.*” As with many of the claims by the author, this is untrue. I presented a paper at the 10<sup>th</sup> International Symposium on Water-Rock Interaction (WRI-10) in Villainies, Sardinia, Italy, June 10<sup>th</sup>-15<sup>th</sup> 2001. The paper is published in the proceedings (see reference below) and is directly related

to wastewater disposal issues at the Honeymoon Uranium Project. International referees reviewed the manuscript prior to its acceptance. The WRI conferences are held every 3 years and are sponsored by the International Association of Geochemistry and Cosmochemistry. They are widely regarded as one of the world's premier international conferences on aqueous phase geochemistry, for their content, high standards and the audience that they attract. Academics, industry representatives and employees of various government organizations attend and present research results at WRI conferences.

Other published work includes a manuscript submitted to the Minerals Council of Australia Environmental Workshop Student Research Award. By the very nature of the award, the manuscript was thoroughly refereed, to the point where it was judged as one of two finalists. Whilst the referees were Australians, the conference was the 25<sup>th</sup> National and 4<sup>th</sup> International Minerals Council of Australia Environmental Workshop. It was attended by many overseas delegates and is considered one of the premier environmental conferences for the Australian mining industry. Considering the size of Australia's mining industry and the fact that Australia currently supplies approximately 20% of the world's uranium, this conference and manuscript are significant. The manuscript has been referenced below.

On page 6, of the "independent review" the author demonstrates a serious misinterpretation of the results of my research. The author implies that I have made unreasonable and unjustifiable assumptions relating to numerical modeling outputs. I believe that these assumptions were adequately discussed in the various research reports and/or referenced for discussion in other sources. The author demonstrates a further lack of understanding in the way in which I have interpreted the modeling results. Ambiguity in the author's arguments prevails with the complaint regarding a lack of "*substantive field evidence produced by Pirlo demonstrating his modeling is accurate and occurring in the field.*" To collect such data would involve collecting samples from bores installed and maintained by Southern Cross Resources. They would therefore be supporting my research, in a similar way to what they did in the past. The anonymous author would then criticise my involvement with the company and label my work as being un-independent.

Mr Thompson, Friends of the Earth and the anonymous author of the "independent review" request that all information pertaining to groundwater impacts and trial mine operations to be placed on public record. Besides the fact that much of this information has commercial value (remember that Southern Cross Resources has invested significantly in the FLT) it is unclear as to what benefit the general public could get from such information. The vast majority of the public would struggle to make informed judgements based on raw geochemical data for groundwater and process fluids. A thorough understanding of solution chemistry applied to natural waters is not typical of the Australian public. The concentration of dissolved elements/species in aqueous solutions must be assessed based on a thorough understanding of chemical thermodynamics and kinetics.

Finally, it should be noted that the terms of reference to the Senate Inquiry do not mention WMC's Olympic Dam deposit. This is significant because Olympic Dam is the largest uranium deposit on Earth, yet it seems to have been excluded from the Senate Inquiry.

Please feel free to contact me if there are any issues that you wish to discuss.

Yours faithfully,

A handwritten signature in black ink that reads "Mark C Pirlo". The signature is written in a cursive, slightly slanted style.

Mark C Pirlo  
19/9/2002.

## **References**

- Pirlo, M. C. 2000. Applications of geochemical modeling to groundwater management at the Honeymoon Uranium Project. *In: Proceedings of the 4<sup>th</sup> International and 25<sup>th</sup> National Minerals Council of Australia Environmental Workshop, 29<sup>th</sup> October - 2<sup>nd</sup> November, 2000, Perth, 479-497.* The Minerals Council of Australia.
- Pirlo, M. C. 2001. Geochemical modeling of wastewater disposal at the Honeymoon in situ leach uranium mine, South Australia. *In: Cidu, R. (ed). Water-Rock Interaction WRI-10. Proceedings of the tenth international symposium on water-rock interaction, WRI-10, Villasimius, Italy, 10-15 June 2001, 2, 1265-1268.*