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Competition for Underground Disposal Space

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Decision commented on: Alberta Energy Regulator, Canadian Natural Resources Limited, Application for Disposal, Lloydminster Field, 2014 ABAER 008

Previous posts on ABlawg have commented on sub-surface resource conflicts especially as between gas storage operations and oil and gas production: see Kallisto # 1 here and Kallisto # 2 here. This decision involving Canadian Natural Resources Limited (CNRL) illustrates that there may also be competition for good disposal sites and that the disposal operations of one party may affect the disposal operations of another party. While this decision involves the use of pore space for water disposal operations we can also anticipate competition for the use of pore space for carbon dioxide disposal purposes (i.e. carbon capture and storage, CCS) if that technology rolls out as anticipated to mitigate Alberta's greenhouse gas emissions.

CNRL produces oil in the Lloydminster area which is associated with high volumes of produced water that it must dispose of. CNRL already has significant infrastructure in place for waste water transport and injection but its increased production in the area means that it also needs to expand its disposal capacity in order to avoid needing to shut in wells. Accordingly, CNRL identified a new disposal target in the form of the 3-17 well which was the subject of this contentious hearing and decision. CNRL first proposed to drill and complete this well for injection into the sandstone Dina formation but amended that application upon receipt of objections from Ener T (which owned the offsetting 16-7 injection well) so as to provide for completion in the Moberly and Cooking Lake Formations instead. The Alberta Energy Regulator (AER) licensed the well for these two formations but as a result of the poor injectivity that it encountered CNRL renewed its initial application asking for approval to abandon the 3-17 well in those two formations and recomplete it for injection purposes in the Dina Formation. Ener T renewed its objections resulting in the AER scheduling a hearing in which Ener T, having filed a statement of concern, was granted full participation rights.

The AER hearing panel identified four issues (at para 13):

- the need for additional disposal capacity,
- the evaluation of alternative disposal zones,
- the capacity of the Dina Formation for injection fluids, and
- the potential for adverse effects on Ener T's AB/16-7 well.

On the question of need the Panel ruled as follows:

> [20] The panel acknowledges that CNRL has productive oil wells that are shut in due to insufficient produced water disposal capacity. It accepts that CNRL's ability to fully exploit and maximize the recovery of oil reserves from its land holdings in the area will be constrained if additional water disposal capacity is not obtained. The panel therefore finds there is sufficient evidence to support CNRL's need for additional disposal capacity in the area.

On the question of alternatives the Panel noted that CNRL had explored a number of different options including the recompletion of abandoned wells but the Panel agreed with CNRL (at para 31) that "the existing wells reviewed may have wellbore integrity issues and that injecting into a new well, such as 3-17, will minimize risk with regards to containment." The Panel also noted (at para 28) that CNRL's proposal would tend to "minimize the effects on the landowner by eliminating the need for additional surface impacts of a new well or additional facilities."

The Panel also examined the alternative formations that might be proposed for disposal. CNRL preferred the Dina formation because it was a proven disposal zone (with more than 300 wells in the region disposing into that zone). The Panel agreed with that assessment and noted (at para 40) that alternative formations proposed by Ener T would not typically be approved for disposal since they were potentially oil bearing.

The most interesting discussion in the decision relates to the potential for CNRL's activities to harm Ener T's injection operations at its offsetting 16-7 well. Here Ener T argued that CNRL's operations would prejudice its own disposal activities and it therefore asked the AER to establish a protective set back or buffer zone to recognize its priority in point of time in identifying and developing this (disposal) resource:

> [64] Ener T argued that it is not in the public interest to allow a large operator such as CNRL to effectively "wash out" a small operator's operation. It also argued that it is not in the public interest to allow large operators like CNRL to select disposal locations that have been established by small operators to be effective disposal zones and drill its well in the same zone and vicinity as the small operator with no consideration of the effects. Instead, Ener T submitted that it is in the public interest to reward people that "get somewhere first" and "incur the risk and the cost of drilling into a certain area."

To protect its interest Enert T asked the AER to impose a 1.6 km buffer on "competing" (my term) injection operations. In effect Ener T was seeking some sort of exclusive or at least prior entitlement to the disposal capacity of the Dina reservoir – which from the map included in Figure 1 of the decision would seem to go beyond the geography of its lease (although we actually learn nothing in this decision about Ener T's production or its disposal rights).

The Panel rejected Enert T's claim for relief. As for the specific request that the AER establish a buffer:

> [74] The panel notes that the AER's regulations do not restrict the distance between disposal wells. The AER's *Directive 065* does provide that notification of a disposal application is to be given to unit operators, approval holders, well licensees, mineral lessees and lessors, and landowners within a 1.6 km radius of a proposed disposal well where the disposal zone is known to be present.

More generally however it would seem that Ener T's claim failed on the basis that it had not convinced the Panel of the likelihood of prejudice. The Panel thought that the evidence supported the idea that the target was "open and regionally extensive" rather than characterized by local barriers (at paras 62 and 76) and accordingly was likely a situation in which the reservoir should be able to accept disposal fluids from both wells. The Panel also thought that if there were any impacts on Ener T's operations they would be limited because of the standard maximum wellhead injection pressure that would be imposed on CNRL's operations. Given that the risk of adverse impact was low but with the positive benefits of increased production and royalties flowing to the province, the Panel approved the application. The Panel did not discuss what would happen if it was wrong and the Dina formation in this location turns out to have a limited capacity for taking injected water. Presumably it will be open to Ener T to apply to the AER to have it review its decision but it is not clear that the AER believes that Ener T has any entitlement that the AER believes that it should protect. This seems quite different from the two Kallisto decisions where the regulator was at pains to develop conditions to protect the prior natural gas storage operation from interference.