Management of Post Abandonment Well Liability in Alberta

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NETL Well Integrity Workshop
Issue

- Abandoned wellbores create barriers and risks for future subsurface resource exploitation and the environment.
- The current management strategy for abandoned wells is inadequate to allow for development in the future.
Current Management Strategy

- Last licensee of record retains liability forever\(^1\)
- Orphan Well Association assumes liability for abandoned wells that have no viable licensee\(^2\)
  - But only after an issue has been identified
- Orphan Well Association is funded by currently operating oil and gas companies
- No liability associated with abandoned and reclaimed wells within the Licensee Liability Rating (LLR) system

\(^1\)Oil and Gas Conservation Act RSA 2000 O-6, s 29 [OGCA].
\(^2\)Ibid s 70(1)
Why is this status quo a problem?

- New development can’t easily assume license of abandoned wells
- Current operators are funding failings of past regulatory regimes, operators and current new entrants
- No incentive to current operators to abandon wells
- Ultimately there won’t be anyone to pay or the burden on the remaining companies will become too great.
Examples

- Dalhousie¹
- Redwater²
- Lexin³
- Sequoia⁴
- Spyglass

¹ Dalhousie Oil Company Limited, Section 40 Review of Abandonment Cost Order No. ACO 2008-1, Turner Valley Field (18 May 2010) ERCB 2010-019 online: ERCB <aer.ca>
² Orphan Well Association v. Grant Thornton Ltd., 2019 SCC 5
Potential Solutions

- Limit liability
- Fund through production levy
- License reverts to crown
In the Beginning

- No real thought to abandonment liability
- Ensure resources not lost to another zone
- Only worried about integrity across the zone of interest
Later

Recognition that up-hole oil and gas should be protected
In the 90’s

The need for groundwater protection was recognized
Now....

The concern is Green House Gas Emissions
What Does the Future Hold?
Government policy and a price on carbon is reducing the dependency on oil, bitumen and coal
Natural Gas, Hydrogen and renewables will displace coal for energy and light transportation

https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcRymNaeQKAEa6UNn2s-JM4zY5GE2-9L5CKbiCaGeIUDU8lwXG
So why worry about abandoned wells?

- 177,000 wells abandoned in Alberta
- 560,000 wells licensed in Alberta
- More wells drilled each year
- Every one of these will be abandoned in the future
The integrity of these wells depends on:

1. How they were constructed; and
2. How they were abandoned
So what should we worry about?

My answer.....

Future subsurface resource development

Abandoned wellbores put these resources, and the environment at risk.

Sub-Surface Resources

- Fluids and gas (oil, bitumen, water, brine, natural gas, syn gas, hydrogen, helium, etc)
- Solids (coal, potash, uranium, lithium, other minerals and metals)
- Pore space (natural gas storage, waste disposal, CO$_2$ storage)
- Heat
Gas over Bitumen

- 850 gas wells shut in or suspended
- 700 abandoned

Impacts the development of bitumen due to gas wellbores not constructed or abandoned to withstand thermal activity
Historical Subsurface Conflict

Thomas Kim, “Overview of Interwellbore Communication Incidents: An ERCB Perspective” (Delivered at the Canadian Society of Unconventional Resources 14th Annual Conference, Calgary, Alberta, 3-4 October, 2012)
Historical Subsurface Conflict

Frac hits.....Regulatory response in D83

Curtesy AER
Historical Subsurface Conflict

In Saskatchewan;

drilling for oil and gas is restricted in the potash areas of the province and highly regulated through the Prairie Evaporite.
Future Subsurface Conflict
In-situ Coal Gasification
Future Subsurface Conflict
Geothermal

Alberta Government Eyes Geothermal Fix to Abandoned Well Crisis

https://www.youtube.com/watch?v=Rs6n0baLQ6w at 5:59
Future Subsurface Conflict
Minerals and Metals

https://media1.britannica.com/eb-media/66/107066-004-46560671.jpg
Future Subsurface Conflict
Pore Space

Figure 1. Types of underground natural gas storage facilities

Source: PB-KBB, inc., enhanced by EIA.

https://www.eia.gov/naturalgas/storage/basics/images/fig1_undergroundstorage.png
Surface Conflict

- Abandoned wells pose risk to future surface development
- Recognized by AER (ERCB) Directive 79
- Abandoned well finder
- Land owners concerned over future development potential and loss of land value

Photo courtesy of Doull Site Assessment Ltd.
Wellbore Strike during Development

Lloydminster

Direct hit on wellbore during excavation for deep services during Home Depot construction. Pressurized gas released for 10-15 minutes.
Barriers to Future Development

- Ongoing liability
- Construction and abandonment regulation
- Transfer of abandoned well license
- Surface impacts and future development

Questions to Consider

Should the licensee of a wellbore, having been abandoned decades prior to a new development, be required to abandon a well to withstand some future technology that was not contemplated at the time of abandonment?
Questions to Consider

Should the licensee be required to re-enter and re-abandon a wellbore to allow for safe exploitation in the future or should the company that will be conducting the new operations be expected to pay?
Questions to Consider

What is the role of the Government to ensure that resources continue to be exploited, for the financial benefit of its citizens, in a way that ensures environmental protection and public safety?
Solution-Limit Liability

- Limit liability so that post reclamation certificate the licensee no longer is liable
- Impose timeframes for minimum monitoring prior to obtaining reclamation certificate.
- Increase regulatory oversight of downhole abandonment compliance prior to issuing reclamation certificate
Solution - License reverts to the Government

- Government becomes licensee
- Point of contact for issues
- Ease of license transfer to new entrants
- Refreshment of licensee
Solution-Funding

- Production based levy
- Funding is higher in times of high price and activity
- All active companies pay and all companies reap the benefit of limited liability post abandonment.
Conclusion

Abandoned well liability matters because our future resource development is threatened.

https://thumbs.dreamstime.com/z/little-boy-digging-hole-yard-58070562.jpg

our future resource development is threatened.