



Four Winds Energy Services Ltd.

Appeal of ERCB High Risk
Enforcement Action 1

November 10, 2009

ENERGY RESOURCES CONSERVATION BOARD

Decision 2009-067: Four Winds Energy Services Ltd., Appeal of ERCB High Risk Enforcement
Action 1

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ENERGY RESOURCES CONSERVATION BOARD

Calgary Alberta

FOUR WINDS ENERGY SERVICES LTD. APPEAL OF ERCB HIGH RISK ENFORCEMENT ACTION 1

Decision 2009-067
Proceeding No. 1622245

1 DECISION

The following is the decision of the Energy Resources Conservation Board (Board/ERCB) regarding the appeal by Four Winds Energy Services Ltd. (Four Winds) of the decision of the ERCB Enforcement Advisor dated June 19, 2009, to deny Four Winds's appeal of ERCB High Risk Enforcement Action 1 dated April 9, 2009, issued against Four Winds.

Having considered the evidence and submissions from all parties, the Board hereby allows the appeal and overturns the High Risk Enforcement Action 1.

2 BACKGROUND

Four Winds holds ERCB approvals/licences for an injection facility at Legal Subdivision (LSD) 16, Section 12, Township 79, Range 11, West of the 6th Meridian, and a disposal well at LSD 15-12-79-11W6M (collectively the facility). The facility is licensed as a Class II facility under *Directive 051: Injection and Disposal Wells—Well Classifications, Completions, Logging, and Testing Requirements*. Four Winds is authorized to use the Facility to dispose of fluids identified under *Directive 051* as appropriate for a Class II well.

During an inspection of the facility on April 8, 2009, ERCB staff found three disposal trucks whose contents were described as completion water. By letter dated April 9, 2009, the ERCB issued a High Risk Enforcement Action 1 against Four Winds for accepting oilfield waste (completion water/flow back containing 2 to 4 per cent potassium chloride [KCl]) that it was not authorized to receive and/or dispose of.

In response to the enforcement action, Four Winds voluntarily suspended operations at the facility. Four Winds later resumed operations at the facility (with ERCB approval) on the condition that it would not receive or dispose of completion water with concentrations of 2 to 4 per cent KCl at the facility.

On April 14, 2009, Four Winds appealed the enforcement action to the Enforcement Advisor. By letter dated June 19, 2009, the Enforcement Advisor denied Four Winds's appeal of the enforcement action.

3 APPEAL TO THE BOARD

By letter dated July 6, 2009, Four Winds appealed the Enforcement Advisor's decision to the Board. Board Members M. J. Bruni, Q.C. (Presiding Member), and T. L. Watson, P.Eng., were assigned to make a decision on this appeal based on written submissions from the parties.

4 ISSUE

The sole issue on this appeal is whether the decision of the Enforcement Advisor to uphold the enforcement action should be overturned.

5 SUBMISSIONS OF THE PARTIES

5.1 Views of the Applicant

Four Winds provided written submissions dated July 6, 2009, and August 5, 2009. After submissions closed, Four Winds filed further submissions dated October 5, 2009, and requested that the Board exercise its discretion to accept the submissions notwithstanding that they were filed after the submission deadline of August 5, 2009.

Four Winds asserted that the Enforcement Advisor wrongfully dismissed its appeal of the enforcement action because of the following:

1) Four Winds was not advised of the case it had to meet

Four Winds referred to comments on page 4 of the Enforcement Advisor's decision that "Brine equivalency can only be identified by comparative analysis." Four Winds submitted that the Enforcement Advisor did not inform Four Winds before he dismissed the appeal that such analysis was the only way to determine brine equivalency. As such, Four Winds asserted that it was not able to conduct the requisite analysis and submit it to the Enforcement Advisor for consideration. Four Winds asserted that the ERCB could have drawn on its expertise to determine whether completion water with 2 to 4 per cent KCl could constitute a brine equivalent.

Four Winds submitted that because it can no longer obtain a sample of the KCl fluids at issue, there is nothing that it can do to prove its "innocence."

2) Four Winds was wrongfully found to have disposed of petroleum crude oil

Four Winds submitted that the Enforcement Advisor's finding that Four Winds disposed of petroleum crude oil was wrong. It was not based on the evidentiary record and contradicted the findings made by the ERCB field inspectors who issued the enforcement action.

3) Four Winds was authorized to dispose of the KCl fluids as they are "brine equivalent" as defined in *Directive 051*

Four Winds submitted that KCl fluids are brine equivalent as they are "equivalent to produced water." This assertion is based on an analytical comparison of potassium with other alkali earth metals. Four Winds submitted that they are ionic salts that dissolve in water and can combine with chloride to form inorganic aqueous salt solutions that share similar chemical characteristics and properties. Four Winds submitted that, based on this analysis, the Enforcement Advisor could have found that the fluids were brine equivalents.

Four Winds acknowledged that upholding the enforcement action was "contingent on the ERCB determining that... completion water with 2% to 4% KCl is not a brine equivalent within the meaning of ERCB Directive 051."

4) Directive 051 did not require Four Winds to obtain the ERCB's prior opinion that KCl water is a brine equivalent fluid

Four Winds submitted that *Directive 051* does not set out any requirements for having KCl water determined by the ERCB as a brine equivalent fluid prior to injection and disposal. Four Winds submitted that this obligation cannot be implied, and if the intention is to require such prior determination, *Directive 051* should be amended to reflect this.

5) The ERCB has accepted injection of 3 per cent KCl water in a Class II well

Four Winds submitted an ERCB approval issued to another operator on May 27, 2008, which approved a scheme for the disposal of Class II fluids. During the required testing under *Directive 051*, the operator injected 47 cubic metres of 3 per cent KCl fluids to conduct the step-rate injectivity test.¹

5.2 Views of the ERCB Staff

Staff did not file submissions in response to Four Winds's submissions dated October 5, 2009, and they did not oppose Four Winds's request that the Board consider its October 5 submissions notwithstanding that they were filed after the submission deadline of August 5, 2009.

By letter dated July 22, 2009, the staff submitted that the only material issue in the appeal was whether completion and flow-back fluids containing 2 to 4 per cent KCl are "brine equivalents" as defined in *Directive 051*. Staff submitted that the fluids were not brine equivalents as neither the ERCB nor Alberta Environment (AENV) provided an opinion to that effect prior to the injection and disposal of the fluids by Four Winds. Staff submitted that this is a clear requirement of *Directive 051*.

Staff submitted that *Directive 051* contemplates the ERCB and AENV making a decision as to whether a substance is a brine equivalent before it is injected and disposed of since it is difficult and impractical to determine the chemical composition of a substance after it has been injected. Staff further submitted that the determination cannot be made after injection because this approach would

- allow operators to inject fluids into Class II wells that may not be found to be brine equivalents by the regulators that are statutorily responsible for ensuring the prevention of subsurface pollution and the protection of the environment;
- create a significant and unnecessary risk to the disposal environment;
- create regulatory uncertainty by not having an established standard for injection prior to injection;
- not be in accord with the wording of *Directive 051* or its spirit and intent; and
- unnecessarily expose licensees of disposal facilities to enforcement risk.

Staff submitted that this situation was analogous to an absolute liability offence and the only defence available to Four Winds was to provide evidence of prior determination by the ERCB and AENV that the KCl fluids were brine equivalent substances. Four Winds knew, or should

¹ ERCB Class II Disposal Approval No. 11093 dated May 27, 2008.

have known, that it was required to submit chemical analysis of the KCl fluids to the ERCB and AENV for an opinion on whether they were brine equivalent substances prior to their injection. Staff concurred that performing that analysis now was too late since there was no way to conclusively determine the chemical composition of the fluids that were injected by Four Winds into the well. Staff did not question whether or not the fluid injected was 2 to 4 per cent KCl water.

Staff did not make submissions on the issue of whether Four Winds disposed of crude oil at the Class II facility.

5.3 Findings of the Board

As a preliminary matter, the Board hereby accepts and has considered Four Winds submissions dated October 5, 2009, notwithstanding that they were filed after the submission deadline.

In consideration of whether the decision of the Enforcement Advisor should be upheld or overturned, the Board is of the view that there is one primary issue to consider in this appeal: whether the disposal by Four Winds of completion and flow-back fluids containing 2 to 4 per cent KCl at its Class II well contravened *Directive 051*.

The parties do not dispute that the fluids in question are properly classified as completion and flow-back fluids containing 2 to 4 per cent KCl. The question to be answered is whether these fluids properly fall within the classification of fluids listed in Section 2.4 of *Directive 051* as acceptable for injection and disposal in a Class II well. Section 2.4 reads in part as follows:

Class II Well used for the injection or disposal of produced water (brine) or brine equivalent fluids and includes:

- produced water associated with the recovery of oil, bitumen, gas, or coalbed methane
- brine from salt cavern or solution mining operations
- water-based pigging fluids from cleaning of collection and injection lines
- brine reject or backwash from water softeners associated with enhanced recovery
- water containing polymers or other chemicals for enhanced recovery
- waste fluids from circulation during well cementing
- CaCl₂ water

Brine equivalent is defined in *Directive 051* as “aqueous salt solutions that are equivalent to produced water in the opinion of AEP [now AENV] and the ERCB.”

As a starting point, the Board examined *Directive 051* to determine if there is any express indication of which classification of well can accept 2 to 4 per cent KCl fluids. The Board notes that the list of acceptable fluids for disposal into a Class II well is not exhaustive. Further, *Directive 051* does not explicitly specify what might be considered a brine equivalent. It therefore leaves open for interpretation what liquids may constitute brine equivalent. The difference in interpretation between staff and Four Winds as to whether the liquids disposed by

Four Winds at the facility were brine equivalents is at the heart of this appeal. Having reviewed *Directive 051*, the Board acknowledges the difficulty facing staff in making this determination because the requirements themselves are not clear. The Board finds that the wording of *Directive 051* is not very helpful in answering these questions. The Board agrees with the staff's statement that this "creates regulatory uncertainty by not having a standard for injection established prior to injection."

Completion and flow-back fluids containing 2 to 4 per cent KCl are not specifically included in the list of acceptable fluids to be injected and disposed of in a Class II well. The Board notes that calcium chloride (CaCl₂) water is identified as a brine equivalent in Section 2.4 of *Directive 051*. The Board concurs with Four Winds that both KCl and CaCl₂ are "ionic salts that dissolve in water and can combine with chloride to form inorganic aqueous salt solutions that share similar chemical characteristics and properties." As such, the Board finds it reasonable to interpret 2 to 4 per cent KCl fluid as being a brine equivalent. In addition, it is reasonable to expect that brine from salt cavern or solution mining operations, water containing polymers or other chemicals for enhanced recovery, or waste fluids from circulation during well cementing could contain KCl.

The Board acknowledges that *Directive 051* does not expressly specify when or how the ERCB and AENV must consider whether a fluid is a brine equivalent. The Board believes it would have been prudent for Four Winds to seek prior approval to dispose of KCl brine in its Class II disposal well. However, given the Board's finding that 2 to 4 per cent KCl fluids are brine equivalents, the timing of when an operator must obtain this approval under *Directive 051* is not relevant to this appeal.

Finally, the Board examined Four Winds's assertion that the Enforcement Advisor erred in finding that the trucks contained petroleum crude oil (a dangerous oilfield waste) that was unacceptable for a Class II facility. The Board concurs with Four Winds that the Enforcement Advisor had no basis on which to make that finding based on the evidence before him. However, the Board does not accept that in doing so the Enforcement Advisor disregarded the staff's findings that the trucks contained completion water with 2 to 4 per cent KCl. On the contrary, the Enforcement Advisor specifically noted the findings that the fluids in question contained 2 to 4 per cent KCl. The Enforcement Advisor specifically stated on page 4 of his decision that

There is no dispute regarding the verbal confirmation that the fluid contains 2% and 4% KCl but there was no evidence to make the determination that this fluid could be considered a brine equivalent. Percent KCl content is not enough information to determine brine equivalency.

These comments clearly indicate to us that the Enforcement Advisor took note of and accepted the staff's findings regarding the trucks' contents. As such, the Board finds that the Enforcement Advisor considered and applied the proper facts in arriving at his decision.

The Board also considered additional criteria in determining whether to grant Four Winds's appeal. In particular, in addition to considering whether ERCB staff erred in law or exceeded their jurisdiction in connection with this matter, the Board also considered whether

- the licensee was in technical compliance with ERCB requirements;
- the ERCB or some other governmental body contributed to the noncompliance; and
- the noncompliance was not risk assessed or was assigned an improper risk assessment and/or improper risk level.

The Board finds that

- 2 to 4 per cent KCl water is a brine equivalent, and
- Four Winds did not violate *Directive 051* by injecting a prohibited substance into its Class II disposal well.

The Board determined that *Directive 051* lacks a clear definition of what constitutes a brine equivalent and a clear process by which a licensee can make that determination. Consequently, the Board suggests that consideration be given to clarifying *Directive 051* as to what is a brine equivalent and the process by which a determination of acceptable fluids can be made by licensees.

Noting that the 2 to 4 per cent KCl fluids disposed in Four Winds's well were brine equivalents within the meaning of *Directive 051*, the Board finds that Four Winds was in technical compliance with ERCB requirements.

Based on the foregoing, the Board hereby allows Four Winds's appeal and overturns the High Risk Enforcement Action and the subsequent decision of the Enforcement Advisor dated June 19, 2009.

Dated in Calgary, Alberta, on November 10, 2009.

ENERGY RESOURCES CONSERVATION BOARD

<original signed by>

M. J. Bruni, Q.C.
Presiding Member

<original signed by>

T. L. Watson, P.Eng
Board Member