

STATE OF SOUTH DAKOTA  
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

BOARD OF MINERALS AND ENVIRONMENT

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IN THE MATTER OF	)	
QUARTZ OPERATIONS, LLC,	)	FINDINGS OF FACT,
NORTHERN POINTS 1 WELL; DENR	)	CONCLUSIONS OF LAW AND
PETITION TO REVOKE PERMIT AND	)	ORDER
PETITION TO FORFEIT SURETY	)	
	)	
(O & G Permit No. 2026)	)	
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On October 19, 2016, the South Dakota Department of Environment and Natural Resources (Department) filed a Petition to Revoke Drilling Permit and Petition for Forfeiture of Surety initiating a contested case against Quartz Operations, LLC, regarding the drilling of the Northern Points 1 well under the above referenced Oil & Gas permit. A notice of hearing was issued on this same date establishing the initial hearing date as November 17, 2016.

Prior to the commencement of the hearing, board member Robert L. Morris was appointed Hearing Chair by the South Dakota Board of Minerals and Environment (Board). On November 3, 2016, Quartz Operations, LLC (Quartz), requested a continuance of the previously scheduled hearing date. This request was granted, and the hearing was rescheduled. An amended notice of hearing was issued by the Department on December 14, 2016.

A contested case hearing was held before a majority of the Board on January 19, 2017. Chief Deputy Attorney General Charles McGuigan appeared as counsel for the Board. Assistant Attorney General Steven R. Blair appeared on behalf of the Department. Lance E. Shurtleff, Hall & Evans LLC, Laramie, Wyoming, and Mark A. Ekse, Hagan Wilka & Archer LLP, Sioux Falls, South Dakota, appeared on behalf of Quartz Operations, LLC.

Based upon the Petition of the Department, the testimony and evidence presented, and being otherwise fully informed as to all matter pertinent thereto the Board makes and enters the following:

### **FINDINGS OF FACT**

1. Quartz Operations, LLC, submitted applications on March 5, 2013, for permits authorizing them to drill two wells known as Northern Points 1 and Northern Points 2.
2. Upon review of the Quartz applications, the Department requested that the Board assert jurisdiction over the bonding process for the Quartz applications. The Department felt that the location, depth, and target formation of the proposed wells, coupled with Quartz's lack of experience in the oil and gas field, suggested a higher than typical bond amount should be set.
3. The Northern Points 1 well was originally proposed to be drilled into the Precambrian formation and to a depth of 9,700 feet.
4. As part of the applications for the permits to drill, Quartz submitted a \$20,000 statewide Plugging and Performance Bond in accordance with SDCL 45-9-15.
5. The statewide bond was not a surety bond but instead other security in the form of a \$20,000 Certificate of Deposit, no. 205428, issued by First National Bank, Pierre, South Dakota, on November 20, 2012, and issued to Quartz Operations, LLC, and the Department.
6. On March 21, 2013, the Board issued a conditional order granting the Northern Points 1 and 2 permits.
7. The Northern Points 2 well site was never drilled.
8. The Northern Points 1 drilling permit was conditioned on thirteen items including compliance with all applicable requirements of SDCL ch. 45-9 and ARSD ch. 74:12.
9. Condition 11.C.1 of the permit to drill the Northern Points 1 well specifically required "100 foot cement plugs must be installed half in and half out of the top of the following formations: Deadwood, Red River, Interlake, Madison, Minnelusa, Minnekahta, and Inyan Kara."
10. Also as part of the conditions imposed upon the Permit to Drill, Quartz was required to submit additional bond in the amount of \$110,000.

11. In accordance with SDCL 45-9-15, the Board required additional bond . The additional bond provided was not a surety bond but instead other security in the form a \$110,000 Certificate of Deposit, no. 207486, issued by First National Bank, Pierre, South Dakota, on March 21, 2013, and issued to Quartz Operations, LLC, and the Department.
12. A total surety amount of \$130,000 is held by the Board under the conditions of the Northern Points 1 drilling permit.
13. The Northern Points 1 well is located at: Northwest Quarter of the Northwest Quarter of Section 7, Township 1 North, Range 14 East, Pennington County, South Dakota.
14. Quartz commenced drilling the Northern Points 1 well on April 2, 2013.
15. On April 12, 2013, at a depth of approximately 4,800 feet, Quartz lost drilling fluid circulation on the Northern Points 1 well after penetrating naturally occurring zones of high porosity sediment in the upper Madison Group.
16. Between April 12, and April 16, 2013, Quartz attempted to plug the zone of high porosity where they lost circulation. The process involved pulling the entire 4,800 foot drill string in and out of the hole several times. On the third attempt, the bottom hole assembly became stuck at approximately 2,760 feet.
17. On April 17, Quartz submitted an initial plan to the Department to remove the stuck drill stem and plug all required aquifers in accordance with the permit conditions.
18. Between April 17, and April 29, 2013, Quartz attempted to retrieve the stuck drill stem, but eventually was unable to retrieve a 150 foot section of drill stem. That section remains in the bore hole.
19. On May 7, 2013, Quartz submitted a plugging plan to the Department proposing three plugs between ground surface and 2,600 feet in depth. The plan was not approved because it did not comply with the requirements of the permit and the Administrative Rules of South Dakota.
20. On May 11, 2013, Quartz attempted to plug the well but was unable to fully execute its unapproved plan when the borehole collapsed on itself at approximately 1,130 feet. Quartz was unable to drill back down to the location of the stuck drill stem.
21. On May 12, 2013, Quartz permanently plugged the upper portion of the well by placing a 290 foot cement plug at the base of the surface casing, and placing a 70 foot cement plug at the surface.

22. The Northern Points 1 well was not cased with production casing. Below the 150 foot section of stuck drillstem, the open borehole of the Northern Points 1 well penetrates the Inyan Kara, Minnekahta, and Minnelusa aquifers.
23. To plug the penetrated aquifers at the Northern Points 1 well site, an operator would need to directionally drill down and around the stuck drill stem and back into the original borehole and then plug the required aquifers. It is estimated the cost of such an operation would require in excess of \$2 million.
24. The Department does not have sufficient data regarding the Minnelusa Aquifer in the vicinity of the Northern Points 1 well to make a precise estimation of water quality in the aquifer in that area. Based on the data that is available, it is estimated that the worst case scenario might be 20,000 milligrams per liter average of total dissolved solids.
25. The Inyan Kara Aquifer in the vicinity of the Northern Points 1 well has relatively good water quality in the range of 500 to 900 milligrams per liter average of total dissolved solids.
26. The Minnelusa Aquifer underlays the Inyan Kara Aquifer, and in the vicinity of the Northern Points 1 well is characterized as having a higher potentiometric surface than the Inyan Kara. Therefore, the unplugged portion of the Northern Points 1 borehole provides a potential pathway for upward flow of relatively lower quality Minnelusa water into the Inyan Kara.
27. It is unknown whether communication is or may occur between the Minnelusa and Inyan Kara aquifers at the Northern Points 1 well site. If such communication did occur it is estimated that water moving through the Inyan Kara would not move faster than 28 feet per year, or 1,400 feet over a 50 year period, in a Northeast-East direction.
28. The fact that Quartz Operations, LLC failed to properly plug the Northern Points 1 well site, regardless of the extent of migration opined during the hearing, still presents a danger of communication between the Minnesula and Inyan Kara, which proper and approved plugging was intended to prevent.
29. As of June, 2015, vegetation has been planted and reestablished, and surface reclamation at the site was deemed complete by the Department. Surface reclamation was a requirement of the permit conditions imposed by the Board regarding the Northern Points 1 well site.
30. Other than surface reclamation, other permit conditions, including but not limited to plugging, as required by applicable law have not been satisfied.

31. Leon Somsen, appearing as a representative of Quartz Operations, LLC, testified at the hearing held in this matter and indicated that Quartz consented to revocation of the drilling permit and forfeiture of the combined plugging and performance bonds which are as indicated, other security, in the form of the referenced certificates of deposit.
32. Any Finding of Fact more appropriately labeled as a Conclusion of Law is hereby re-designated as such and incorporated below therein.

### **CONCLUSIONS OF LAW**

1. The Board has jurisdiction over this matter and has been granted by SDCL 45-9-13 and 45-9-54 the authority to administer and enforce the provisions of SDCL ch. 45-9.
2. The Department is the state agency that, pursuant to SDCL ch. 45-9, assists in the regulation of the production of oil and gas resources in the State of South Dakota
3. SDCL 45-9-15, as it read at the time of Quartz's applications, required only a \$20,000 blanket plugging and performance bond, but indicated the Board had the authority to "require additional bond if the circumstances require."
4. ARSD § 74:12:03:02(4)(a)(i), specifically requires that in wells without production casing all aquifers, salt zones, and fluid-bearing formations must be sealed or separated with individual cement plugs, circulated to fill at least 100 feet of hole. Each individual cement plug must be at least 50 feet above the top of these formations, as specified by the secretary.
5. According to ARSD § 74:12:02:03, the permit issued for the Northern Points 2 well site expired due to the failure of Quartz to commence drilling within one year of the permit being issued.
6. According to the terms of SDCL 45-9-15, the two certificates of deposit submitted by Quartz were conditioned upon: "the performance of the duty to plug each dry or abandoned well."
7. Failure to plug the Northern Points 1 well in accordance with the conditions of the drilling permit is a violation of Quartz's permit, and a violation of ARSD § 74:12:03:02(4)(a)(i).
8. The evidence has established that Quartz Operations, LLC, failed to comply with the terms and conditions of Oil & Gas permit no. 2026, and as such the permit should be revoked.

9. The evidence has established that Quartz Operations, LLC, failed to comply with the terms and conditions of Oil & Gas permit no. 2026, as well as the requirements of SDCL ch. 45-9 and ARSD ch. 74:12, regarding the proper plugging of the Northern Points 1 well and as such the two certificates of deposit held as sureties in this matter should be forfeited to the State of South Dakota.
10. Quartz Operations, LLC, through the testimony of its representative and the statements of legal counsel does not contest that the above referenced permit should be revoked and the referenced certificates of deposit should be forfeited.
11. Forfeiture of the other security in the form of the certificates of deposit does not bar further legal or equitable remedies available to the DENR or the Board against Quartz Operations, LLC.
12. Any Conclusion of Law more appropriately labeled as a Finding of Fact is hereby re-designated as such and incorporated above therein.

### **ORDER**

Based upon the above Findings of Fact and Conclusions of Law, Robert L. Morris, duly appointed hearing chair hereby orders that:

1. The Department's Petition is hereby granted;
2. Oil & Gas Permit no. 2026, granted to Quartz Operations, LLC, for the purposes of drilling the Northern Points 1 well shall be and is hereby revoked;
3. Certificate of Deposit no. 205428, issued by First National Bank, Pierre, South Dakota, in the amount of \$20,000 shall be and is hereby forfeited;
4. Certificate of Deposit no. 207486, issued by First National Bank, Pierre, South Dakota, in the amount of \$110,000 shall be and is hereby forfeited;
5. Department staff shall carry out all activities necessary to transfer the proceeds from each Certificate of Deposit to the Department.
6. Forfeiture of the other security in the form of the certificates of deposit does not bar further legal or equitable remedies available to the DENR or the Board against Quartz Operations, LLC.

Pursuant to ARSD § 74:09:01:19 these Findings of Fact, Conclusions of Law, and Order constitute the final decision of the Board.

Dated this 16<sup>th</sup> day of March, 2017

SOUTH DAKOTA BOARD OF  
MINERALS AND ENVIRONMENT



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Robert L. Morris  
Hearing Chairman

THE PARTIES ARE ADVISED of their right, pursuant to SDCL ch. 1-26 to further appeal this final agency decision and Order to the circuit court within thirty (30) days of receipt of this decision and Order.