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RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 01-0326478

APPLICATION OF EOG RESOURCES, INC. (253162) PURSUANT TO STATEWIDE RULE 13 PERTAINING TO THE CASING, CEMENTING, DRILLING, AND COMPLETION REQUIREMENTS FOR VARIOUS WELLS, EAGLEVILLE (EAGLEFORD-1) FIELD, GONZALES COUNTY, TEXAS

HEARD BY: Robert Musick, P.G. - Technical Hearings Examiner
Charles S. Zhang - Administrative Law Judge

HEARING DATE: August 27, 2020

CONFERENCE DATE: December 8, 2020

APPEARANCES:

APPLICANT:

Doug Dashiell, Attorney
Jeremy Montanez, Regulatory Specialist
Phil Lacasse, Petro physicist
Casey Kidney, Sr. Geologist
Chris Culver, Petroleum Engineer

REPRESENTING:

EOG Resources, Inc. (253162)

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

EOG Resources, Inc. (Operator No. 253162) ("EOG" or "Applicant") seeks an exception to 16 Tex. Admin. Code § 13(b)(3)(B) ("Statewide Rule 13(b)(3)(B)") pertaining to the casing, cementing, drilling and completion requirements for various wells in the Eagleville (Eagle Ford-1) Field (Field No. 27135700) (the "Field") located in Gonzales County, Texas.

The Application originally requested a Statewide Rule 13(b)(3)(B) exception for five wells. In the hearing, EOG withdrew two of the five wells. Therefore, the three remaining wells listed below are the Subject Wells ("Subject Wells") to be addressed in this hearing and the Examiners Report and Recommendation:

1. J.M. Preston Unit Well No. 6H (API No. 42-177-34234);
2. Merritt, South Unit Well No. 9H (API No. 42-177-34229); and

3. Novosad Unit Well No. 17H (API No. 42-177-33968).

EOG's evidence established that the Subject Wells met the following criteria for an exception as outlined in Statewide Rule 13(b)(3)(B):

1. All freshwater zones identified by the Commission's Groundwater Advisory Unit are protected because of the Subject Well's well design which includes surface casing and adequate cement to a depth below the base of usable quality groundwater ("BUQW");
2. No completed communication routes were identified during the assessment;
3. The well bore's design is creating an adequate barrier for any productive zone, potential flow zone and/or zone with corrosive formation fluids to prevent cross flow from one formation to another effectively sealing off all such zones.

In addition, the evidence at the hearing demonstrated that the Subject Wells would prevent waste and protect shallow groundwater.

Notice was given to all operators in the Field. The application was not protested. The Technical Hearings Examiner and the Administrative Law Judge (collectively, "Examiners") recommend approval of EOG's Statewide Rule 13(b)(3)(B) exception for the Subject Wells as set out in the Final Order.

DISCUSSION OF THE EVIDENCE

Notice and Hearing:

A Notice of Hearing ("Notice") was issued by the Commission on August 11, 2020 for the hearing set on August 27, 2020. The Notice contains (1) a statement of the time, place, and nature of the hearing; (2) a statement of the legal authority and jurisdiction under which the hearing is to be held; (3) a reference to the particular sections of the statutes and rules involved; and (4) a short and plain statement of the matters asserted. All operators in the Field were notified and given at least ten days to protest. No protest was received for any of the Subject Wells.

The hearing was held on August 27, 2020, as noticed. Applicant appeared and participated in the hearing.

Request for Relief:

EOG sought an exception to Statewide Rule 13(b)(3)(B) at the hearing pertaining to the casing, cementing, drilling and completion requirements for various wells in the Eagleville (Eagle Ford-1) Field located in Gonzales County, Texas. The Application requests a Statewide Rule 13(b)(3)(B) exception for the following Subject Wells:

1. J.M. Preston Unit Well No. 6H (API No. 42-177-34234);

2. Merritt, South Unit Well No. 9H (API No. 42-177-34229); and
3. Novosad Unit Well No. 17H (API No. 42-177-33968).

Exception Authority:

The exception authority is sought pursuant to the following requirement as established by the Statewide Rule:

Statewide Rule 13(b)(3)(B) - Cementing method: The production string of casing shall be cemented by the pump and plug method, or another method approved by the Commission, with sufficient cement to fill the annular space back of the casing to the surface or to a point at least 600 feet above the shoe. If any productive zone, potential flow zone and/or zone with corrosive formation fluids is open to the wellbore above the casing shoe, the casing shall be cemented in a manner that effectively seals off all such zones by one of the methods specified for intermediate casing in paragraph (2) of this subsection. A float collar or other means to stop the cement plug shall be inserted in the casing string above the shoe. Cement shall be allowed to stand under pressure for a minimum of eight hours before drilling the plug or initiating casing pressure tests. In the event that the distance from the casing shoe to the top of the shallowest productive zone, potential flow zone and/or zone with corrosive formation fluids make cementing, as required above, impossible or impractical, the multi-stage process may be used to cement the casing in a manner that will effectively seal off all such zones, and prevent fluid migration to or from such zones within the wellbore. Uncemented casing is allowable within a producing reservoir provided the production casing is cemented in such a manner to effectively isolate and seal off that zone from all other productive zones in the wellbore as required by §3.7 of this title (relating to Strata To Be Sealed Off).

Demonstration:

In this case, the productive formations associated with the Subject Wells are the Austin Chalk and the Eagle Ford Shale. The Austin Chalk, which is the formation that overlies the Eagle Ford Shale, is considered by the Commission to be a productive reservoir in the area. Therefore, Statewide Rule 13(b)(3)(B), requires that productive zones throughout the well bore be cemented in a manner that effectively isolates and seals off each applicable zone from all other such zones in the well bore.

Evidence in the hearing indicates the Eagle Ford Shale is fully isolated and sealed by cement as required by Statewide Rule 13(b)(3)(B). EOG indicated in the hearing that a portion of the Austin Chalk is isolated in each well, but not completely. Therefore the Subject Wells are not sufficiently cemented to fill the annular space adjacent to the Austin Chalk formation as required by Statewide Rule 13(b)(3)(B). For convenience, the Subject Wells and associated casing and reservoir data presented at the hearing are summarized in Table 1 below.

Table 1: Subject Wells and Associated Casing and Reservoir Data

Wells	Production Status	Reservoir & Bond Log Depth	Closest SWD to Well	Well Casing Information
J.M. Preston Unit Well No. 6H	No Production At Time of Hearing	Austin Chalk established from 10,008 feet to 10,484 Feet, MD. Top of Cement at 10,036 feet, MD. Approximately 28 feet of Austin Chalk is not cemented with competent cement as required by Rule. Eagle Ford Top at 10484 Feet MD. Eagle Ford fully cemented across the entire zone.	3 miles from the TE Pilgrim SWD No. 2. Injecting from 10,400 feet, MD to 12,500 feet, MD, Injecting into the Georgetown, etc. reservoirs.	Surface Casing from Surface to 4,598.62 feet, MD. No casing pressure observed. BUQW is 3,550 feet (2) Production Casing from 4,598 feet, MD to 16,685.50 Feet MD. No casing pressure observed.
Merritt, South, Well No. 9H	Producing Well with cumulative production from of 148,534 BO; 100,898 Mcf of gas;	Austin Chalk established from 9,404 feet to 9,750 feet. Top of Cement is at 9,632 feet, MD. Approximately 228 feet of the Austin Chalk is not cemented with competent cement as required by Rule. Eagle Ford Top is 9,750 feet and fully cemented across entire zone.	1.5 miles of well TE Pilgrim SWD No. 2 is injecting from 10,400 feet, MD to 12,500 feet, MD. Injecting into Georgetown Edwards reservoir.	Surface Casing from Surface to 4,363.50 feet, MD. No casing pressure observed. (1) BUQW is 3,550 feet (2) Production Casing from 4,365 to 19,044.87 Feet, MD. No casing pressure observed.
Novosad Unit Well No. 17H	No Production At Time of Hearing Also, Novosad 17H had not been completed as of the hearing date	Austin Chalk established from 11,142 feet to 11,704 feet. The top of Cement at 11,278 feet, MD. Approximately 136 feet of Austin Chalk is not cemented as required by Rule Eagle Ford Top 11,704 feet, MD and fully cemented across entire zone.	0.6 mile from District Shiner, No. 1 SWD injecting from 4,100 feet, MD to 8,400 feet, MD. Also, 1.9 miles from Dilworth SWD Well injecting from 5,200 feet, MD to 7,720 feet, MD. Both injecting into the Wilcox Formation	Surface Casing from Surface to 1303.11 feet, MD. No casing pressure observed. BUQW is 3,550 feet (2) Intermediate Casing from 1303.11 to 8,591.13 feet, MD. No casing pressure observed. (1) BUQW is 3,550 feet Production Casing from 8,591.13 feet, MD to 18,894.25 feet, MD. No casing pressure observed. (1)

- (1) No data to indicate any issue with communication to the Austin Chalk through casing pressure or cross flow.
(2) Must be protected by Surface Casing to the base of usable quality groundwater (BUQW) at 3,550 feet as per the requirement from the Commission's Groundwater Advisory Unit to protect shallow fresh water.

EOG notified the Commission's District Office that the Austin Chalk was not fully cemented in accordance with the Statewide Rule 13(b)(3)(B) requirements. The Commission's District Office allowed the wells to be completed with the understanding that remedial action was required post completion to address the deficiency.

Remedial action to address the deficiency typically include perforating the casing and performing a cement squeeze in the annular space to eliminate any cross flow from one production unit to another. EOG assessed the Austin Chalk formation and did not see the benefit of the squeeze job in the annular space because the Austin Chalk already met Statewide Rule 13(b)(3)(B) performance criteria. EOG maintained in the hearing that the relatively impermeable Austin Chalk formation had no cross flow, therefore the Austin Chalk was effectively sealed off from any production zones (i.e., Eagle Ford Shale) in the well bore. Below are the results of EOG's assessment of the Subject Wells:

1. All freshwater zones identified by the Commission's Groundwater Advisory Unit is isolated with Subject Well surface casing. EOG contended in the hearing that all freshwater zones in the area above the BUQW are protected. Therefore, EOG contends the Subject Wells will be protective of shallow groundwater without any cement in the annular space behind the Austin Chalk formation because the formation is considered relatively impermeable.
2. Disposal wells in the vicinity of the Subject Wells were assessed for potential communication routes.
 - a. A disposal well was identified in the vicinity of the Merritt Unit South No. 9H Well and the J.M. Preston Unit No. 6H Well. The disposal well injects into formations below the Eagle Ford. No potential communication route was identified to the Austin Chalk formation from any nearby injection wells.
 - b. A disposal well in the vicinity of the Novosad Unit No. 17H Well is injecting into the Wilcox formation which is isolated behind the Novosad Well's intermediate casing. The well bore casing and cement is creating a barrier between the Austin Chalk formation and the shallower Wilcox formation resulting in adequate isolation to prevent cross flow.
3. EOG determined that the Subject Wells do not have pressure outside the well casing resulting in isolation and no observed cross flow, thus meeting part of the performance criteria outlined in Statewide Rule 13(b)(3)(B). The Austin Chalk formation is considered an impermeable and tight formation in the vicinity of the Subject Wells. Therefore, It is unlikely that cross flow between the Austin Chalk and any other zone in the Subject Wells will occur without fracture stimulation treatment to initiate production.
4. EOG determined that a cement squeeze in the annular space in the Subject Wells could potentially harm the wells which would result in waste. The Subject Wells can produce as currently cased and cemented without causing waste and harm to the Subject Wells. Therefore, EOG maintained in the hearing that the Subject Wells will prevent waste if the Statewide Rule 13(b)(3)(B) exceptions are approved by the Commission.

5. As part of their assessment, EOG presented Oil and Gas Docket No. 01-0273318, a Statewide Rule 13 exception application of Enerquest Operating, LLC (“Enerquest”), which was heard by the Commission on January 13, 2012. Enerquest’s request was granted by Final Order on February 28, 2012 and had similar conditions as presented by EOG in this case. The case is summarized below.
 - a. The well associated with the Enerquest case is located in Gonzales County, Texas, the same county as the EOG case.
 - b. Five formations were determined to be adjacent to the un-cemented liner: the Austin Chalk; Eagle Ford Shale; Georgetown; Buda and the Edwards.
 - c. The Eagle Ford Shale was the only productive formation out of the five formations. The Austin Chalk was not considered a production zone in the hearing. The hearing record determined the Eagle Ford Shale was a low permeability, hydrocarbon containing shale that does not flow unless it is stimulated using large volume fracture stimulation treatment.
 - d. Enerquest indicated in the hearing that the five formations, including the low permeable Eagle Ford Shale, were isolated from any infiltrating water zones.
 - e. All freshwater zones were isolated with cement behind the surface casing. Therefore, the shallow groundwater was protected.
 - f. Enerquest established that the remedial work which typically consists of casing perforations and squeezing cement in the annular space would cause damage to the well; and the cement squeeze was unnecessary as there was no chance of cross flow from productive intervals (Eagle Ford Shale) to other zones.
 - g. The Commission granted the exception authority.

Examiners’ Recommendation

The Examiners recommend that the exceptions to Statewide Rule 13(b)(3)(B) be granted. The hearing record indicates the Austin Chalk formation is a productive formation, but typically requires fracture stimulation treatment to produce hydrocarbons in commercial quantities. Due to its recognition as a tight, impermeable formation, the Austin Chalk is effectively and naturally sealed off from any other zone in a Subject Well’s wellbore. Performing a remedial cement squeeze in the annular space adjacent to the Austin Chalk is unnecessary. It is unlikely that cross flow between the Austin Chalk and any other zone will occur without fracture stimulation treatment to initiate production.

At the hearing, EOG agreed on the record that the Final Order in this case is to be final and effective when the Master Order relating to the Final Order is signed.

FINDINGS OF FACT

1. EOG Resources, Inc. (Operator No. 253162) (“EOG” or “Applicant”) seeks an exception to 16 Tex. Admin. Code § 13(b)(3)(B) (“Statewide Rule 13(b)(3)(B)”) pertaining to the casing, cementing, drilling and completion requirements for three wells in the Eagleville (Eagle Ford-1) Field (Field No. 27135700) located in Gonzales County, Texas (the “Application”).
2. A Notice of Hearing (“Notice”) was issued by the Commission on August 11, 2020 for the hearing set on August 27, 2020. The Notice contains (1) a statement of the time, place, and nature of the hearing; (2) a statement of the legal authority and jurisdiction under which the hearing is to be held; (3) a reference to the particular sections of the statutes and rules involved; and (4) a short and plain statement of the matters asserted. All operators in the Field were notified and given at least ten days to protest. No protest was received for any of the Subject Wells.
3. The hearing was held on August 27, 2020, as noticed. Applicant appeared and participated in the hearing.
4. EOG requested in its original Application a Statewide Rule 13(b)(3)(B) exception for five wells. In the hearing, EOG withdrew two wells that were in the original Application. The three remaining wells in the Application listed below are the Subject Wells addressed in the hearing conducted on August 27, 2020.
 - a. J.M. Preston Unit Well No. 6H (API No. 42-177-34234);
 - b. Merritt, South Unit Well No. 9H (API No. 42-177-34229); and
 - c. Novosad Unit Well No. 17H (API No. 42-177-33968).
5. The productive formations associated with the Subject Wells are the Austin Chalk and the Eagle Ford Shale. The Austin Chalk, which is the formation that overlies the Eagle Ford Shale, is considered by the Commission to be a productive reservoir in the vicinity of the Subject Wells.
6. Statewide Rule 13(b)(3)(B) requires the productive zones in a well to be cemented in a manner that effectively isolates and seals off each zone from all other zones in the well bore.
7. The Eagle Ford Shale is fully isolated and sealed by cement as required by Statewide Rule 13(b)(3)(B).
8. The Austin Chalk formation is not sufficiently cemented to fill the annular space adjacent to the Austin Chalk formation as required by Statewide Rule 13(b)(3)(B). EOG notified the Commission’s District Office that the Austin Chalk was not fully cemented in accordance with the Statewide Rule 13(b)(3)(B) requirements. The Commission’s District Office allowed the wells to be completed with the understanding that remedial action was required post completion to address the Statewide Rule 13 deficiency.

9. Post completion of the Subject Wells, EOG assessed the Austin Chalk formation and determined the Austin Chalk formation to be a tight, impermeability formation where cross flow between the Austin Chalk and any other zone is unlikely. EOG's assessment determined the Austin Chalk formation already meets the Statewide Rule 13(b)(3)(B) performance criteria to effectively seal off any flow to and from any other zone within any of the Subject Well's wellbore.
10. All freshwater zones identified by the Commission's Groundwater Advisory Unit are isolated with the Subject Wells' surface casing. Therefore, all freshwater zones in the area above the base of usable quality groundwater ("BUQW") are protected.
11. EOG determined that a cement squeeze in the annular space in the Subject Wells could potentially create harm to the well which would result in waste. The Subject Wells can produce as currently cased and cemented without causing waste or harm to the well.
12. As part of their assessment, EOG presented Oil and Gas Docket No. 01-0273318, a Statewide Rule 13 exception application of Enerquest Operating, LLC ("Enerquest"), which was heard by the Commission on January 13, 2012. Enerquest's request was granted by Final Order on February 28, 2012 and had similar conditions as presented by EOG in this case. Below is a summary of the key issues similar to EOG's case.
 - a. Enerquest's Application is for a well in Gonzales County, Texas, the same county as the EOG case.
 - b. Five formations were determined to be adjacent to the un-cemented liner: the Austin Chalk; Eagle Ford Shale; Georgetown; Buda and the Edwards.
 - c. The hearing record determined the Eagle Ford Shale was an impermeable, hydrocarbon containing shale that does not flow unless it is stimulated using large volume fracture stimulation treatment.
 - d. Enerquest indicated that the five formations are isolated from any infiltrating water zones.
 - e. All freshwater zones were isolated with cement behind the surface casing.
 - f. Enerquest established that the remedial work composed of the squeezing cement would cause damage to the well; and the cement squeeze was unnecessary as there was no chance of cross flow from productive intervals to other zones in the well bore.
 - g. The Commission granted the exception authority for Enerquest as proposed in the hearing held on January 13, 2012.
13. The requested Statewide Rule 13(b)(3)(B) exception authority will prevent waste and protect shallow groundwater.

14. At the hearing, EOG agreed on the record that the Final Order in this case is to be final and effective when the Master Order relating to the Final Order is signed.

CONCLUSIONS OF LAW

1. Resolution of the subject applications are a matter committed to the jurisdiction of the Railroad Commission of Texas. Tex. Nat. Res. Code § 81.051.
2. All notice requirements have been satisfied. 16 Tex. Admin. Code § 1.42.
3. The requested exception authority under 16 Tex. Admin. Code § 3.13 will prevent waste.
4. The Subject Wells as established in the hearing have been determined to be compliant with Statewide Rule 13(b)(3)(B) - *Cementing method*. The hearing record indicates the impermeable Austin Chalk formation has no cross flow without fracture stimulation treatment, therefore the Austin Chalk is effectively sealed off from any other zones achieving the performance criteria established in Statewide Rule 13(b)(3)(B).
5. Pursuant to § 2001.144 (a)(4)(A) of the Texas Government Code and the agreement of the applicant on the record, the Final Orders can be final and effective when a Master Order relating to the Final Order is presented at Commission conference and signed by the Commissioners.

EXAMINER'S RECOMMENDATION

The Examiners recommend that the exception to Statewide Rule 13(b)(3)(B) be granted for EOG Resources, Inc., pertaining to the casing, cementing, drilling and completion requirements for the Subject Wells in the Eagleville (Eagle Ford-1) Field (Field No. 27135700) located in Gonzales County, Texas. The Examiners recommend approval of EOG's Statewide Rule 13(b)(3)(B) exception authority for the Subject Wells as set out in the Final Order.

Respectfully submitted,

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Robert Musick
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Robert Musick
Technical Hearings Examiner

C Zhang
Charles S. Zhang
Administrative Law Judge