

BEFORE THE STATE CORPORATION COMMISSION  
OF THE STATE OF KANSAS

|                                                 |   |                              |
|-------------------------------------------------|---|------------------------------|
| In the Matter of the Application of Midstates   | ) | Docket No. 19-CONS-3173-CUIC |
| Energy Operating, LLC to authorize injection    | ) |                              |
| of saltwater into the Squirrel formation at the | ) |                              |
| Thrasher Wells #I-5, #I-4, and #I-3, and to     | ) |                              |
| increase the injection pressure on all wells    | ) | CONSERVATION DIVISION        |
| encompassed by Permit E-31965, located in       | ) |                              |
| Section 25, Township 13 South, Range 20         | ) |                              |
| East, Douglas County, Kansas.                   | ) | License No.: 35503           |

**PRE-FILED DIRECT TESTIMONY OF TERRY BALLOU**

1    **I.    BACKGROUND INFORMATION AND QUALIFICATIONS**

2    Q.    STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

3    A.    My name is Terry Ballou. My business address is Ballou Oil Well Service, LLC, P.O. Box  
4           352, Osawatomie, KS 66064.

5    Q.    WHAT IS YOUR OCCUPATION?

6    A.    I am self-employed as an owner and officer of Ballou Oil Well Service, LLC ("Ballou Well  
7           Service") which is an oil and gas service company, that performs contract lease pumping and  
8           well pulling services in eastern Kansas. Ballou Well Services currently provides contract  
9           pumping services on the Thrasher Lease for MidStates Energy Operating, LLC  
10          ("MidStates") which is the applicant in this Docket.

11   Q.    WHAT WAS THE NATURE OF YOUR EMPLOYMENT PRIOR TO THAT TIME?

12   A.    I am a third generation oil operator and have been around the oil business my whole life. I  
13           started pumping oil leases in 1994 and in 1996 I began working full time as a contract oil  
14           lease pumper. In 1999 I purchased Ballou Well Service from my grandfather and since that  
15           time I have performed well pulling and lease pumping services for Ballou Well Service on a

1 full time basis. During my career I have been the full time pumper for more than 50 oil leases  
2 and 500 wells in eastern Kansas, and I have worked on many thousand wells all across  
3 eastern Kansas.

4 **II. PURPOSE OF THE SUBJECT APPLICATION**

5 Q. WHAT IS THE PURPOSE FOR FILING THE APPLICATION WHICH IS THE SUBJECT  
6 OF THIS DOCKET?

7 A. To obtain authority authorizing the use of three injection wells, the Thrasher #I-5, I-3 and I-4  
8 located in Section 25, Township 13 South, Range 20 East, Douglas County, Kansas and to  
9 increase the injection pressure on all wells encompassed by Permit E-31965.

10 Q. PLEASE DESCRIBE THE PROJECT MIDSTATES IS CONDUCTING ON THE  
11 THRASHER LEASE THAT HAS LED TO THE FILING OF THE SUBJECT  
12 APPLICATION.

13 A. Midstates became the operator of the Thrasher Lease in 2017 and at that time the Thrasher  
14 #10 and I-5 injection wells had already been drilled. The Kansas Corporation Commission  
15 ("KCC") had authorized injection into the Thrasher I-5 well but it had not authorized  
16 injection into the Thrasher #10. Midstates obtained authorization from the KCC to utilize the  
17 Thrasher #10 well as an injection well by and through Docket No. 18-CONS-3196-CUIC  
18 however through certain filings in said docket, Midstates became aware that the injection  
19 authority the Thrasher I-5 well had been revoked by reason of the prior operator failing to  
20 keep its operator's license current. Promptly upon learning that such permit had been  
21 revoked, Midstates filed its application to reinstate injection authority for the Thrasher #I-5  
22 Well in order to voluntarily maintain compliance with KCC rules and regulations. Midstates

1 also wishes to drill two additional injection wells, i.e. the Thrasher I-3 and I-4 to further  
2 develop the field and therefore Midstates seeks design approval for such wells through this  
3 Docket. In addition, in 2018 the Commission authorized Midstates to inject into the Thrasher  
4 #10 at a maximum injection rate of 100 barrels per-day and a maximum injection pressure of  
5 400 psig. Upon receiving such authority Midstates attempted to place such well into service,  
6 however such well will not accept sufficient water at 400 psig pressure to achieve an effective  
7 water flood on the Thrasher lease. Therefore, Midstates requests authority to increase such  
8 injection pressure to 500 psig for all wells on the Thrasher lease, in order to cause such wells  
9 to accept sufficient water to achieve an effective water flood.

10 It is common practice to drill injection wells in eastern Kansas as part of the  
11 development process to maximize ultimate recovery of oil and to utilize produced water.  
12 Unless a proper water flood is implemented utilizing the subject injection wells, significantly  
13 less oil will be recovered from the production wells on the Thrasher Lease thereby wasting a  
14 portion of the recoverable oil beneath said lease.

15 The Thrasher I-5 was permitted in 2014 and has been operating since such time with  
16 no adverse effects attributable to such injection during that time. Thus, there is no reason that  
17 we cannot also conclude that the Thrasher #I-3 and I-4 well will operate equally as safely  
18 and efficiently as the Thrasher I-5 has operated for the last five years.

19 In addition, injection into the Thrasher #I-5, I-3 and I-4 will complement the  
20 injection into the Thrasher #10 that was permitted in 2018. Injection of water into the  
21 Thrasher I-3 and I-4 will simply further develop and expand the water flood already being  
22 conducted upon the Thrasher Lease.

1 Q. AS PART OF THE APPLICATION PROCESS, THE APPLICANT WAS REQUIRED TO  
2 PUBLISH NOTICE AS WELL AS GIVE NOTICE BY MAIL TO ALL LANDOWNERS  
3 AND LEASEHOLD INTEREST OWNERS WITHIN A HALF MILE OF THE THRASHER  
4 LEASE. WERE THOSE NOTICE REQUIREMENTS COMPLIED WITH?

5 A. Yes.

6 Q. WILL THE INJECTION WELLS WHICH ARE THE SUBJECT OF THE PENDING  
7 APPLICATION COMPLY WITH ALL APPLICABLE RULES AND REGULATIONS  
8 PROMULGATED BY THE KANSAS CORPORATION COMMISSION?

9 A. Yes.

10 Q. IN YOUR OPINION WILL THE WELL CONSTRUCTION AND DESIGN OF THE  
11 SUBJECT WELLS PROPERLY PROTECT THE FRESH AND USABLE WATER  
12 RESOURCES IN THE AREA?

13 A. Yes.

14 Q. IN YOUR OPINION WILL GRANTING THE APPLICATION WHICH IS THE SUBJECT  
15 OF THIS DOCKET PREVENT WASTE?

16 A. Yes.

17 Q. IN YOUR OPINION WILL INJECTION INTO THE SQUIRREL FORMATION  
18 THROUGH THE SUBJECT INJECTION WELLS BE CONTAINED WITHIN THE SAID  
19 SQUIRREL FORMATION?

20 A. Yes.

21 Q. IN YOUR OPINION WILL INJECTION AT THE PROPOSED RATE AND PROPOSED  
22 INCREASED PRESSURE THROUGH THE SUBJECT INJECTION WELLS INTO THE

1 SQUIRREL FORMATION INITIATE FRACTURES THROUGH THE STRATA  
2 OVERLAYING THE SAID SQUIRREL FORMATION THAT COULD ENABLE  
3 INJECTION FLUID OR FORMATION FLUID TO ENTER FRESH AND USABLE  
4 WATER STRATA?

5 A. No. Injection at the rates and pressures proposed in the subject application is very common in  
6 this area for injection wells into the Squirrel formation. In addition, the Hertha limestone  
7 formation located above the Squirrel formation is nearly 300 feet thick and such formation  
8 truly is impermeable. Due to the extremely thick and impermeable Hertha limestone  
9 formation present in this area the only way injection or formation fluid could migrate up and  
10 enter fresh and usable water strata would be through a casing failure. However, well  
11 completion reports and Mechanical Integrity Tests performed on the I-5 Well well clearly  
12 demonstrate that there is no casing failure in the Thrasher I-5 and such well completion  
13 reports and mechanical integrity tests will demonstrate that no casing failure exists on the  
14 Thrasher I-3 and I-4 before injection is authorized by Commission staff pursuant to the design  
15 approval process.

16 Q. THE SUBJECT APPLICATIONS REQUEST A MAXIMUM INJECTION RATE OF 100  
17 BBLS/DAY AND A MAXIMUM INJECTION PRESSURE OF 500 PSIG, PLEASE  
18 EXPLAIN WHY THESE RATES AND PRESSURES ARE NEEDED?

19 A. The Squirrel formation is a somewhat tight formation and higher pressures are required in  
20 order to get this reservoir to accept water in a manner that is conducive to an effective water  
21 flood. Injection through the Thrasher #10 well was attempted at 400 psig, however the  
22 reservoir would not accept sufficient water through such well so increased pressure is

1 required. If the subject authority is obtained we will begin injection at the maximum 500 psig  
2 requested in the application. In my opinion we would not be able to operate an effective water  
3 flood upon the Thrasher Lease using injection pressures less than 500 psig, and a portion of  
4 the recoverable oil would be left unrecovered and waste will occur. The injection rate is  
5 important as well, because in order to operate an effective water flood on the Thrasher Lease  
6 it is critical that we inject more fluid into the reservoir than is removed through the production  
7 wells. Therefore, the request for 100 bbls/day is based upon the needs of the water flood  
8 program that is proposed upon the Thrasher Lease. In addition, both the injection rate and  
9 volume are consistent with other operations in the area and also with the rates and pressures  
10 approved by the Commission for other injection wells in the area.

11 Q. ARE ALL OF THE WELLS WITHIN A QUARTER MILE RADIUS OF THIS INJECTION  
12 WELL COMPLETED IN A MANNER TO PROTECT FRESH AND USABLE WATER  
13 RESOURCES?

14 A. I believe they are.

15 Q. SOME PROTESTANTS HAVE EXPRESSED A CONCERN ABOUT THE FRESH  
16 WATER AQUIFER IN THE AREA AND GROUND WATER. COULD YOU PLEASE  
17 ADDRESS THOSE CONCERNS?

18 A. The Well Completion Report for the Thrasher I-5 well indicate that when the well was drilled  
19 the operator drilled down approximately 40 feet, and set that length of seven inch surface  
20 casing, and pumped cement up the backside of that pipe for its entire length. Then they drilled  
21 down to the total depth of approximately 822 feet, and completed the well into the Squirrel  
22 formation which is the formation that the subject well will inject into using 2.875" casing and

1 pumped cement up the back side of that casing for its entire length. A Mechanical Integrity  
2 Test ("MIT") was performed upon the well in 2017 prior to filing the Midstates Application  
3 to ensure the integrity of the well construction. The subject well passed the MIT test with no  
4 issues. This well will be required to pass MIT's every five years as required by KCC  
5 regulations. The Thrasher I-3 and I-4 wells will be completed in the same manner as the  
6 Thrasher I-5 and will be subjected to the same MIT requirements. Additionally, I inspect the  
7 Thrasher Lease every day and I am knowledgeable enough to detect any issues that could  
8 arise, such as leaks, excessive pressures, etc. With the well construction techniques utilized,  
9 the MIT testing, and the daily monitoring by Ballou Well Service the subject well sufficiently  
10 protects all fresh and usable water.

11 Q. IN YOUR OPINION DO THE SUBJECT INJECTION WELLS POSE A SIGNIFICANT  
12 RISK TO FRESH AND USABLE GROUND WATER FORMATIONS IN THE AREA?

13 A. No.

14 Q. SOME PROTESTANTS HAVE EXPRESSED A CONCERN ABOUT INDUCED  
15 SEISMICITY CAUSED BY THE SUBJECT INJECTION WELLS. COULD YOU PLEASE  
16 ADDRESS THOSE CONCERNS?

17 A. First, there are approximately 79 injection wells located within a 3 mile radius from the  
18 subject injection well (including two on the Thrasher Lease), all of which have operated at  
19 rates and pressures similar to what is being requested in this Docket and there is no evidence  
20 that any of such wells have caused or contributed to any induced seismicity.

21 Second, this well is a true enhanced recovery well in that its purpose is to increase the  
22 ultimate recovery of oil from the Thrasher Lease. The Thrasher Lease produces very little

1 water and what water is produced will be injected back into the same formation from which it  
2 came together with an adequate amount of makeup water to conduct an adequate water flood.  
3 Thus this well is in no way similar to the high volume deep disposal wells that have been  
4 linked to induced seismicity.

5 Third, it is my understanding that seismic activity originates in the basement rock and  
6 in order for there to be any potential for induced seismicity, the water injection must  
7 communicate with such formation. However, the basement rock is found at approximately  
8 2,300 - 2,500 feet in the region where the subject well is located and the subject well is  
9 completed into the Squirrel formation which is found at approximately 729 feet. Therefore,  
10 more than 1,500 feet of impermeable rock and shale layers will prevent the subject well from  
11 communicating with the basement rock.

12 Finally, the injection rates and pressures being sought in this Docket are incredibly  
13 minimal in the context of oil and gas development and I am not aware of any investigation,  
14 study or credible research which has ever found a correlation between induced seismicity and  
15 injection wells operating at rates and pressures as low as those being requested in this Docket.

16 Q. DOES THIS COMPLETE YOUR TESTIMONY TO THE COMMISSION?

17 A. Yes.

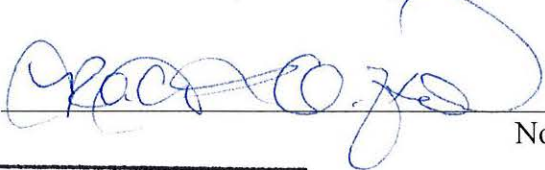
**VERIFICATION OF TERRY BALLOU**

STATE OF KANSAS  
COUNTY OF FRANKLIN, ss:

Terry Ballou, being duly sworn, upon his oath states that he has read the document titled "Prefiled Direct Testimony of Terry Ballou" to which this Verification is attached, that he is aware of its contents, and declares that the statements contained in said document are true and correct to the best of his information, knowledge and belief.

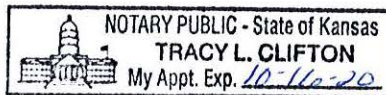
  
\_\_\_\_\_  
Terry Ballou

SUBSCRIBED AND SWORN to before me this 25<sup>th</sup> day of February, 2019.

  
\_\_\_\_\_

Notary Public

Appointment/Commission Expires:



## **CERTIFICATE OF SERVICE**

I hereby certify that a copy of the above and foregoing was sent via U. S. Mail, postage prepaid, hand-delivery, or electronically, this 25<sup>th</sup> day of February, 2019, addressed to:

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and Patricia Bondurant  
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Keith A. Brock