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STATE OF NEW MEXICO
DEPARTMENT OF ENERGY, MINERALS AND NATURAL RESOURCES
OIL CONSERVATION DIVISION

APPLICATION OF GREAT WESTERN DRILLING LTD.
FOR A NON-STANDARD OIL SPACING AND
PRORATION UNIT AND COMPULSORY POOLING,
LEA COUNTY, NEW MEXICO

CASE NOS. 15875-15876
consolidated

APPLICATION OF CHISOLM ENERGY OPERATING, LLC
FOR A NON-STANDARD SPACING AND
PRORATION UNIT AND COMPULSORY POOLING,
LEA COUNTY, NEW MEXICO

CASE NOS. 15865-15868
consolidated

GREAT WESTERN AND ADVANCE ENERGY'S CLOSING STATEMENT

Great Western Drilling Ltd. and Advance Energy Partners (AEP) submit this closing statement following the December 13, 2017 Examiner hearing in the above consolidated matters.

Background

Great Western Drilling Ltd. and Chisholm Energy Operating, LLC filed competing compulsory pooling/non-standard unit applications covering lands in Section 34, Township 21 South, Range 34 East, NMPM, Lea County, New Mexico, which seek to pool all uncommitted interests in the Bone Spring formation, as follows:

- In Case No. 15875, Great Western seeks an order (1) approving a non-standard oil spacing and proration unit in the Bone Spring formation comprised of the W/2W/2 of Section 34, Township 21 South, Range 34 East, NMPM, Lea County, New Mexico, and (2) pooling all mineral interests in the Bone Spring formation underlying the non-standard unit.
- In Case No. 15876, Great Western seeks an order (1) approving a non-standard oil spacing and proration unit in the Bone Spring formation comprised of the E/2E/2 of

Section 34, Township 21 South, Range 34 East, NMPM, Lea County, New Mexico, and (2) pooling all mineral interests in the Bone Spring formation underlying the non-standard unit.

- In Case No. 15865, Chisholm seeks an order (1) creating a non-standard 160-acre, more or less, spacing and proration unit comprised of the W/2 W/2 of Section 34, Township 21 South, Range 34 East, NMPM, Lea County, New Mexico; and (2) pooling all uncommitted interests in the Bone Spring formation underlying this acreage.

- In Case No. 15866, Chisholm seeks an order (1) creating a non-standard 160-acre, more or less, spacing and proration unit comprised of the E/2 W/2 of Section 34, Township 21 South, Range 34 East, NMPM, Lea County, New Mexico; and (2) pooling all uncommitted interests in the Bone Spring formation underlying this acreage.

- In Case No. 15867, Chisholm seeks an order (1) creating a non-standard 160-acre, more or less, spacing and proration unit comprised of the W/2 E/2 of Section 34, Township 21 South, Range 34 East, NMPM, Lea County, New Mexico; and (2) pooling all uncommitted interests in the Bone Spring formation underlying this acreage.

- In Case No. 15868, Chisholm seeks an order (1) creating a non-standard 160-acre, more or less, spacing and proration unit comprised of the E/2 E/2 of Section 34, Township 21 South, Range 34 East, NMPM, Lea County, New Mexico; and (2) pooling all uncommitted interests in the Bone Spring formation underlying this acreage.

Initially, Great Western alone opposed Chisholm's Applications. [See Pre-Hearing Statements of Great Western Drilling Ltd.] Subsequently, Great Western and AEP reached agreement for AEP to acquire Great Western's acreage interests in Section 34. [Great Western/AEP Exhibit 7.] Per that agreement, AEP would operate the subject properties going forward. [Id.] AEP intends to honor Great Western's drilling proposals and AFEs, and would drill both proposed wells. [Tr. 167:4-23] AEP and Chisholm are both private equity companies with identical business models of acquiring properties and "moving reserves" to PDP classification to establish high values for further development internally or by third-parties. [TR. 218: 5-23] But Great Western/AEP and Chisholm take different approaches when actually proving-up and developing properties. As Great Western/AEP demonstrate, the utilization of more-modern and

proven completion techniques applied in a prudent sequence of development more closely align with the Division's mission of preventing waste and the drilling of unnecessary wells.

Points and Authorities

The OCD is a creature of statute, expressly defined, limited and empowered by the laws creating it. The Division has jurisdiction over matters related to the conservation of oil and gas in New Mexico, but the basis of its powers is founded on the duty to prevent waste and to protect correlative rights. "The prevention of waste is the *paramount power*, inasmuch as this term is an integral part of the definition of correlative rights." *Continental Oil Co. v. Oil Conservation Comm'n*, 1962-NMSC-062, 70 N.M. 310 (emphasis added); *see also* NMSA 1978, § 70-2-11. In this case, avoidance of waste should be the determinative factor for the Division.

A. Great Western/AEP's Development Plan is Reasonable and Prudent; Chisholm's Is Not

The parties have proposed very different development plans for Section 34. Great Western/AEP demonstrated at hearing that their development plan is prudent, while Chisholm's plan is unreasonably aggressive.

Although Great Western/AEP owns throughout Section 34, for the time being their development plan covers only the W/2/W/2 and E/2/E/2 of the section. Great Western/AEP proposes the Grama Ridge East 34 State 3BS #2H well to test the 3rd Bone Spring sand in the W/2/W/2 of the Section, while the Grama Ridge East 34 State 2BS #9H well is proposed to test the 2nd Bone Spring sand in the E/2/E/2. [Tr. 98:25-99:7] Great Western/AEP proposes no development at this time in the E/2/W/2 or W/2/E/2 of the section. Instead, following evaluation of the results of the two initial wells, Great Western/AEP would propose additional wells as appropriate. [Tr. 176:8-13; 230:18-20]

Great Western/AEP's prudent development approach is consistent with their understanding of the geology of the 2nd and 3rd Bone Spring sands in Section 34. When asked about the water resistivity within the Bone Spring in this area, Great Western's expert petroleum geologist, Terry Williamson, testified that the formation "has a higher oil saturation than a lot of areas. In other words, when you complete a horizontal well, it's going to have a higher oil cut than a lot of the areas that we're used to. So [that's] the good thing about being updip -- the bad thing is your zone is thinning. It's thinning. Even your gross zone is thinning. The good thing is kind of the pinching and higher oil saturation. Having said that, we just wanted to drill a single well before drilling a bunch." [Tr. 157:10-19] "[W]e wanted to drill one 2nd [Bone Spring well] initially just to make sure" [Tr. 159:21-160:6]

On the other hand, Chisholm proposes a far riskier development plan by which four wells would first be drilled back-to-back. [Tr. 80:8-15] These four wells would then be completed. [Tr. 82:14-17] Chisholm would allow no time to evaluate the success of its first well. [Tr. 80:16-19] The four wells would be drilled back-to-back "no matter what." [Tr. 81:14-16] This, despite the fact that Chisholm has never done this before. [Tr. 265:19-266:25] Then, following a one-year time period, four additional wells would be drilled within the section. [Tr. 81:17-21] The one-year period appears to be solely by agreement with joined parties; Chisholm does not necessarily wait for initial results before drilling additional wells where, as here, they believe geologic risk is very low. [Tr. 267:14-25]

Great Western/AEP demonstrated that Chisholm's approach to the development of Section 34 is not prudent. [Tr. 111:22-112:13] AEP's expert landman, David Scott, testified that ". . . if you're going to recover fewer reserves by pounding it all out early and you save a few dollars for that, we feel it's better to -- to get the most reserves you can out of the ground as a reasonably

prudent operator would do even at the cost of a little bit more money . . .” [Tr. 178:22-179:2] Likewise, AEP’s expert petroleum engineer, David Harwell, testified that “as a prudent operator, we believe that drilling a single 2nd Bone and a single 3rd Bone well and waiting for production results is a better plan.” [Tr. 181:17-20]

Chisholm’s retort to this was the claim that it’s plan for “back-to-back” drilling and completions for its proposed wells was superior because “simul-fracs” would maintain pore pressure across the acreage which would reduce pore pressure draw-down, resulting in more effective fracs. [TR. 254: 11-20] But this promise is contrary to Chisholm’s development program. Chisholm is not proposing “simul-fracs” in the same interval across Section 34. Rather, its proposal is to land and complete its Grama Ridge East 34 State 3BS #2H and #3H wells in the Third-Bone Spring interval in only the W/2 , while its Grama Ridge East 34 State 2BS #8H and #9H are planned for the Second-Bone Spring interval. [Chisholm Ex. 2] These intervals are significantly displaced vertically and there is no evidence that they are in communication. Chisholm’s promise of conducting lighter but more effective fracture completions by maintaining pore pressure across the Section will not be realized.

B. Great Western/AEP’s AFEs Are Good Faith Estimates Based on Optimal Fracking Intensity in this Area; Chisholm’s Are Not

The parties’ AFEs differ greatly. Great Western/AEP’s AFEs are good faith estimates based on higher frac intensities than those proposed by Chisholm. On the other hand, Chisholm’s AFEs do not reflect good faith estimates, even at their lower proposed frac intensity.

Great Western/AEP’s AFEs come in at approximately \$7.125M for the pilot hole Grama Ridge East 34 State 3BS #2H well, and \$6.072M for the Grama Ridge East 34 State 2BS #9H. [Great Western/AEP Exhibit 5; Tr. 106:19-25] Chisholm’s AFEs are much lower, ranging from \$4.1M to \$4.3M across its eight proposed wells. [Great Western/AEP Exhibit 6] Great Western’s

expert landman, Carter Muire, testified that these amounts are “substantially less than what we would see for some of the wells that have been recently drilled successful[ly] in this area in particular. We felt that Chisholm’s AFEs were low and light on the amount on the money to be spent on the fracture and stimulation, and we were concerned that some of the other elements of their frac proposals were not going to be sufficient to demonstrate an economic rate of return for the production on the wells.” [Tr. 110:3-11]

AEP’s David Harwell testified that the Chisholm AFEs “are in line with what I normally see on AFEs with the exception of completion . . . where they appeared to be light.” [Tr. 181:25-182:3] “The part that bothers [AEP], looking at this, is the number for the stimulation, where we’re looking at \$860,000 for a stimulation. We think that’s light. We’re active with the vendors now. For a 10,000-foot well, we’ll spend 5.3 million in this category. Now, that’s a 10,000-foot well. You say, well, what’s the difference? We’re going to run 2,500-pounds-per-foot frac. [. . .] We have other operators [in the area] that are running 1,500 pounds per foot, and we’re seeing the \$1.4 million on the stimulation cost.” [Tr. 187:1-188:3] As such, even at 1,500 pounds per foot Chisholm’s AFE does not appear to be a good faith estimate of these costs. Although Chisholm did not compare its AFEs with any AFEs in the area other than Great Western’s submitted in these cases, Chisholm nonetheless conceded that its AFEs are substantially lower than is typical. [Tr. 79:16-21; 80:4-7]

C. Great Western/AEP’s Proposed Completion Will Prevent Waste; Chisholm’s Will Leave Unrecovered Reserves in the Ground

The parties agree that the principal reason for the differences between their AFEs is due to differences in completion techniques, particularly frac intensity. [Tr. 74:1-4, 110:12-16, 138:6-8] Accordingly, appropriate completion of Bone Spring wells in Section 34 is the real source of contention between the parties.

While Great Western/AEP propose a frac intensity in the range of 2,000-2,500 pound per feet, Chisholm intends a 315,000 pounds per stage slickwater design resulting in a lateral treatment of 1,500 pounds per stage. [Tr. 77:14-17; 187:1-188:3] AEP's David Scott testified that Chisholm's "fracking design [is] less than optimal for this area, and so it would cost more money to complete these wells. So we felt like the Great Western wells demonstrated at least a greater frac poundage on the wells, and we like those better. We may ultimately want to go a little stronger on the completion than what Great Western has proposed." [Tr. 168:15-21] As such, Mr. Scott testified that Great Western/AEP's plans for development will result in the recovery of additional hydrocarbon resources that would go unrecovered if Chisholm's plans went forward. [Tr. 168:23-169:7]

AEP's Mr. Harwell testified extensively that Chisholm's plan will result in lower EURs, because "four wells across the section at 1,500 pounds per foot will leave significant oil behind." [Tr. 182:18-25] Mr. Harwell's Exhibit 13 demonstrates in detail why this is so. [Great Western/AEP Exhibit 13] Page 2 of that exhibit is an internal AEP study showing the effect of frac intensity versus expected ultimate recovery on wells in Lea County. Estimated recoveries from horizontal wells in the area operated by several reputable operators are shown. As explained by Mr. Harwell, generally, smaller fracs such as those proposed by Chisholm at 1,500 pounds per foot are ending up with less recovery, whereas higher frac intensities such as those proposed by Great Western/AEP are showing better results and, on a footage basis, they're recovering more oil per foot of lateral. [Tr. 183:9-184:25; Exhibit 13 at 2]

The plot on the bottom right of Page 2 of Exhibit 13 is a chronological plot for the same wells showing frac intensity on the y-axis and a timeline on the x-axis. "It shows that the industry has gone from fracs of the 600 to 800 pounds per foot, that were customary in 2013, '14 and some

of '15, that now we're seeing customarily fracs in the 2,000 to 3,000 pounds per foot. So what we conclude from this is that the wells currently being fracked are being done with, say, 2,000 to 3,000 pounds per foot, and we're seeing significantly better results from those wells than we saw from wells in the past -- even last year, we're seeing much better results." [Tr. 185:1-15; Exhibit 13 at 2]

Page 3 of Mr. Harwell's Exhibit 13 also shows the bigger picture. "The whole area is seeing wells that are having higher frac intensity. If you look at the plot on the top right corner, it shows the bending of the wells and the cum[ulative] oil per thousand foot of lateral. So the wells that are recovering much more are in green. The ones that are having much less recovery are in red, and even lower, in orange. And so . . . at least on an average basis, we clearly see an improvement as we are getting higher [frac] intensities." [Tr. 185:18-186:23; Exhibit 13 at 3] Chisholm's expert engineer James Huling suggested that proppant levels above 1,500 pounds per feet produce diminishing returns. [Tr. 242:7-21] However, he based this statement on exactly three data points and admitted it was "up for interpretation." [Tr. 270:17-271:23]

Page 4 projects recoveries for both a 2nd Bone Spring well and a 3rd Bone Spring well fracked at 1,500 pounds per foot, 2,000 pounds per foot and 2,500 pounds per foot. AEP's numbers show that, "at least on an oil basis for the 2nd Bone, we can recover another 230,000 barrels with a 2,500-pound-per-foot frac. [. . .] [O]bviously, there is a higher recovery. But from our standpoint, coming into a position like this, where we have an operator that wants to do a 1,500-pounds-per-foot frac and . . . we think they can do something more, they can recover more . . . we would not be able to recover reserves in the future from that. We can't go back in and re-frac an old well. We can, but we'd never get the original conditions where we could additionally frac it. Maybe we can get in small incremental by doing something else, but we could never get back to

the early position that we are in now. We have a choice. We can frac 1,500. We can frac 2,000. We can frac 2,500. And so to us, it's imperative that the decision's made early to frac it with the highest intensity. That makes sense to us. And from the industry, we're seeing sort of 2,500 pounds per foot, and that makes sense." [Tr. 187:7-190:5; Exhibit 13 at 4]

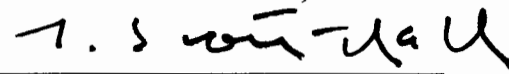
Accordingly, it is Mr. Harwell's opinion that development as AEP proposes will result in the recovery of additional hydrocarbon reserves that might otherwise go unrecovered under Chisholm's plan. [Tr. 190:6-22; Exhibit 13 at 4] In fact, it is Mr. Harwell's testimony that "each individual well stands a chance of recovering at least 200,000 barrels additional with [Great Western/AEP's] plan. [. . .] You're talking about \$1.5 million difference to the State for each well between the two plans." [*Id.*]

Chisholm's development and completion plans, then, are the very definition of waste: they leave oil in the ground, to the State's detriment. Meanwhile, Great Western/AEP's plans are fully aligned with the Division's "paramount" statutory mandate to prevent waste. Accordingly, Great Western/AEP's Applications to drill and operate in Section 34 should be granted, while Chisholm's Applications in Section 34 should be denied.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was filed with NMOCD and served on counsel of record by electronic mail on January 11, 2018:

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A handwritten signature in black ink, appearing to read "J. Scott Hall", written above a horizontal line.

J. Scott Hall