



P L A I N S
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O P E R A T I N G
C O M P A N Y

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CONCEPT DIVISION
RECEIVED

APR 8 1995

PLAINS
PETROLEUM
COMPANY

April 5, 1995

Mr. Mike Stogner
New Mexico Oil Conservation Commission
2040 Pacheco
Santa Fe, New Mexico 87505

Re: Location Exception Request
Plains-Hill "B" Federal #13
Teague (McKee) Field
Lea County, New Mexico

Dear Mr. Stogner,

11276

The following is a list of the exhibits which I have included with this exception location request. In addition, a brief explanation of each exhibit is included to hopefully aid you in your evaluation of this request. Additional information and/or exhibits will be coming to you from our district office in Midland.

Plains Petroleum initiated Simpson McKee production with the drilling and completion of the Plains-Hill "B" Federal No. 10 (SWSW Section 35, T23S-R37E) in November, 1993 pumping 412 BOPD, 220 MCFD, and 10 BWPD. This well was a southeast stepout from the original Teague McKee field developed by Amon Carter in the mid 1950's. The original Teague McKee field had six producing wells, two of which were converted to injection in 1964. The Simpson McKee was finally abandoned in this field in 1982 after making approximately 811 MBO, 999 MMCF, and 480 MBW.

Subsequent to completion of the Plains-Hill "B" Federal No. 10, a 3D seismic program was acquired covering approximately nine square miles with the focus being the Teague Field. The 3D confirmed the subsurface interpretation that the Simpson McKee reservoir in the Plains-Hill "B" Federal No. 10 was separated from the production to the north by a fault. The original Teague McKee field developed by Amon Carter appears to be bounded on all sides by faulting. The Simpson McKee production established by Plains appears to be on a downthrown block along the main structural axis that controls production in Teague field. (Please see Exhibit A-Structure: Top McKee Sand Marker). On the basis of the interpretation of the 3D, Plains elected to drill an east and a west offset to the Plains-Hill "B" Federal No. 10. The seismic indicated that the Plains-Hill "B" Federal No. 10 was on the crestal axis of a south plunging nose with gentle structural dips to the west of the well, and somewhat steeper

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dips in an easterly direction.

The Plains-Hill "B" Federal #12 (SESE Section 34, T23S-R37E) was drilled and completed as a west offset on December 29, 1994. The initial potential from the Lower McKee Sand was 71 BOPD, 35 MCFD, and 7 BWPD. This well came in 24 feet structurally low to the Hill "B" Federal No. 10 but has not encountered any significant water production. The poorer production is interpreted to be due in part to pressure drawdown in the reservoir coupled with the fact that only the Lower McKee Sand was opened. Note: Perforations have just been added in the Middle McKee Sand in the Plains-Hill "B" Federal No. 12. These are depicted on Exhibit B (Structural Cross Section A-A') and are currently testing.

The Plains-Baylus Cade Federal No. 5 (SESW Section 35, T23S-R37E) was drilled and completed as an east offset producer on January 28, 1995. The Baylus Cade No. 5 came in 31 feet structurally low to the Hill "B" Federal No. 10 and had an initial potential of only 23 BOPD, 12 MCFD, and 5 BWPD. The poor performance of this well is attributed in part due to pressure drawdown, but primarily due to poorer reservoir quality, i.e. permeability development, in the McKee Sand in this wellbore. Additional stimulation is planned for the McKee Sand in this well.

After an extensive evaluation of two analog Simpson McKee accumulations immediately north in conjunction with the interpretation of the 3D seismic, it was decided that two additional Simpson McKee tests would be drilled on Plains' leasehold. One of these locations which has already been permitted is the Plains-Baylus Cade Federal No. 6 (NESW Section 35, T23S-R37E), located northeast of the Plains-Hill "B" Federal No. 10.

~~The other location and the one which we are requesting a location exception is the Plains-Hill "B" Federal No. 13 (SWSE Section 34, T23S-R37E). Plains' initial location for this well was a standard location west of the Hill "B" Federal No. 12, located 985' fsl & 1570' fsl of Section 34. Upon further review of this location using the 3D seismic data it was determined that this location would be in close proximity to an interpreted fault complex running northwest-southeast, considerably raising the risk in the well. Moving south or west, which would not require an exception location, would be moving in the wrong direction even closer or even across the interpreted fault. It was determined that moving the location approximately 300 feet northeast would put the wellbore a reasonable distance away from the fault, as well as our own wellbore, the Hill "B" Federal No. 12. Moving the location to this excepted location will dramatically lessen the risk of drilling a dry hole due to faulting at the Simpson McKee level and thus the commission's approval of this request would be greatly appreciated.~~

Exhibit A: Structure: Top McKee Sand Marker This map is a structure map on top of the Simpson McKee Sand Marker which resides approximately 16 feet above the top of the Upper McKee Sand. This structure map incorporates the subsurface and 3D seismic data into the interpretation. As can be seen on the map,

several Simpson McKee Sand producers exist on the overall Teague structure immediately northwest and on trend with Plains' active area. The structure is a northwest-southeast trending anticlinal feature broken up by several faults on the southern end. The original orthodox location is shown on the structure map. This location proved to be extremely close to the interpreted NW-SE trending fault complex. Moving the location northeast approximately 300 feet moves the wellbore safely away from this faulting.

Exhibit B: Structural Cross Section A-A': Simpson McKee Sand This exhibit is an east-west structural cross section showing the Simpson McKee to Ellenburger section in the three recently completed wells drilled by Plains. Drillstem test and perforated intervals are shown for each well. As you can see, correlations in the Simpson McKee Sand package are quite easy with an Upper, Middle, and Lower member identified and correlated. The west side of the cross section shows the original and new proposed locations and attempts to depict the structural and fault interpretation from the 3D seismic data. While the exact location of the fault is difficult to determine, it is interpreted to be in very close proximity to the original orthodox location, i.e. less than 150 feet from the proposed wellbore. Let it be noted that no significant water has been produced thus far in any of Plains' McKee producers and thus the slight gain in structural advantage in changing to the unorthodox location is not a factor in this request.

Exhibit C: Time Structure Map: Simpson McKee This map is a color coded time structure map of the McKee Sand event mapped directly off the 3D seismic data picks for the McKee. The interpreted faults are shown as well as the locations of the McKee producers within the 3D seismic survey. The location of the various vertical seismic profiles or slices included in this package are also shown on this map.

Exhibit D: Crossline 137 This vertical seismic profile is an east-west slice through the 3D survey which intersects all three of the previously drilled wells, and also goes through the original orthodox proposed location. This seismic section is the same line of section as that portrayed in Exhibit B: Structural Cross Section A-A'. Various key horizons are pointed out on this and the other seismic sections included with this request. The McKee Sand trough (colored yellow) and the peak immediately underlying the trough appear to be broken immediately west of the original proposed wellbore. A synthetic seismogram (Exhibit G), generated from the logs on the Plains-Hill "B" Federal No. 12, has been included to show the excellent tie between the synthetic seismogram and the real data. This seismogram allows us to tie into the McKee Sand seismic event with a great degree of confidence. The breakup of the McKee event immediately west of the original proposed location at approximately trace 135 is interpreted to be a fault.

Exhibit E: Crossline 135 This is a vertical seismic profile that is immediately north (approximately 150') and parallel to Crossline 137. This line shows the location of the new unorthodox proposed location and its relationship to the

fault which is also shown. Please note that on this and the previous line that the McKee Sand event is very consistent and unbroken as one goes eastward into the heart of the field.

Exhibit F: Inline 142 This vertical seismic profile is a north-south slice that goes through the new excepted location. This seismic section more clearly shows the subject fault to the south of the proposed location. In addition, the fault that separates Plains' McKee production from that immediately to the north in the northeast quarter of Section 34 can be seen as depicted on the exhibit. North of this interpreted fault the McKee event is consistent and unbroken through this productive area.

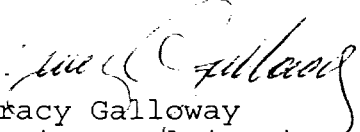
Exhibit G: Synthetic Seismogram - Hill "B" Federal No. 12 This synthetic seismogram along with synthetics generated for the other two wells drilled by Plains allows us to accurately tie into the real seismic data. The ties between the synthetics and seismic has been quite good and has allowed accurate mapping of the McKee Sand event. The best bandwidth to tie the synthetic to the seismic data is the 70-80Hz on the left hand side of the plot.

Exhibit H: Arbitrary Seismic Line D(3) This is an arbitrary line that has been magnified 400% over the other seismic line presentations. As can be seen on Exhibit C, this line is a NE-SW line that starts southwest and downthrown to the critical fault and extends northeast through the original proposed orthodox location and continues through the new proposed unorthodox location. This magnified wiggle-trace plot clearly shows the location of the interpreted fault.

Exhibit I: Arbitrary Seismic Line D(3) This is the same arbitrary line as in Exhibit H in a color-enhanced presentation. This is intended to try and show the changes and location of the interpreted fault more clearly than the wiggle-trace plot.

This discussion and set of exhibits hopefully provides evidence for the concerns that Plains has with regard to probable faulting at the McKee Sand level in the original proposed orthodox location. Potential remedies to move away from the fault and remain in a legal location were unsatisfactory. Moving to the northeast approximately 300 feet would greatly lower the risk of drilling a dry hole and at the same time is moving interior to Plains' own leasehold. It is our hope that the commission will grant approval on this request for a spacing exception. Please let me know if I can be of further help or if you have any questions.

Sincerely,


Tracy Galloway
Senior Exploitation Geologist