

OK-NARO POSITION PAPER - UNITIZATION

Because of Oklahoma's "Forced Pooling Laws" spacing, or the size of the drilling and producing unit and the potential reservoirs to be spaced as established by the Corporation Commission is extremely important to the mineral owner because it determines what portion of his minerals may be included in a drilling unit and subsequently held by the lessee when production is established. Forced pooling can only occur after a spaced unit has been created. The pooling order must specifically list the spaced reservoirs in the unit which are being pooled. By statute, pooling is only a last resort to place under lease forcefully those not leased at the best terms provided by arms length transaction to those mineral owners in the unit that have leased. The pooling law and Corporation Commission rules, regulations and hearings to implement it have been around for decades. There have been many court cases supporting and adding implied covenants and meaning to "forced pooling" and they are still ongoing.

Once production has been established and the areal extent of the producing reservoir determined by numerous drilled wells, normally a field name is applied to that reservoir. All reservoirs deplete over time as oil and gas are withdrawn until eventually they become stripper producers and finally are plugged and abandoned (P&A). Again, decades ago producers determined by injecting water, natural gas, flue gas, CO₂ or combinations of these entities into the formation, production of oil and condensate could be enhanced extending the life of the field and providing more reserves than would have been produced by the initial "primary" producing means. This enhanced recovery has been termed "secondary" or "tertiary" recovery.

A great deal is known about reservoirs that go to secondary or tertiary recovery because they usually have long primary production history which allows geologists and engineers tools to utilize all the reservoir data to determine where the best wells are located vs. the poorest based upon porosity, permeability, thickness, oil/gas ratio, water production, pressure decline and structural limits such as faults and water levels/gas caps. Operators approached the legislature decades ago requesting a statute implemented by

Corporation Commission rules to create secondary and tertiary recovery units which are much larger than the individual drilling units, based upon the information acquired from the individual wells in the specified spaced producing reservoir. The legislature then, by statute, allowed this much larger unit but required the operator to have agreement by 63% of the working interest (W.I.) and royalty interest (R.I.) parties separately. If that percentage or greater approved the secondary/tertiary recovery unit, then the Corporation Commission would, by hearing and then order, create the unit.

The secondary/tertiary unit was to have the purpose of enhancing and increasing the production from the named reservoir thus more fully draining the reservoir while protecting each participant's correlative rights and preventing economic waste. The secondary/tertiary unit must have a surface geographical boundary that encompasses the field. Potential remaining reserves and recoverable reserves must be estimated within this boundary. By common practice all the reservoir parameters mentioned above are utilized to determine those reserves, original unit by original unit. This establishes the amount recoverable by initial spaced unit and that volume is then proportioned to the W.I. and R.I. owners in that unit as it is a part of the total new secondary/tertiary recovery unit. Again, by custom upon Corporation Commission hearing and approval that reservoir spaced unit has received a value (percentage) of the reserves and the surface geographic area has received a value (percentage). Absolute subsurface drainage is not truly known until the field is completely depleted. Thus say, for example, in a 27 section unit a spaced 640 acre original drilling unit is 4.19% of the geographical area but due to reservoir thickness, porosity and permeability it is determined that this particular 640 acres had 6% of the secondary/tertiary unit reserves and it is agreed that reservoir reserves should be a 75% factor and geographic area a 25% factor hence production from the entire field secondary unit would have: $6\% (.75) + 4.19\% (.25) = 5.5\%$ attributable to that section each month for payment to its W.I. and R.I. owners. This means these must be other original spaced units that would receive less than the 4.19% geographical area portion there unit is to the total secondary/tertiary unit. It should be noted when the legislature created by law secondary/tertiary units the idea was it was for recovery of oil and condensate that would not be recovered by primary production means. It was not to

be applied to primary production. At that time, no one believed shale or coal to be a major or even minor source of commercial oil or gas and certainly horizontal drilling and completion practices were unknown.

This large secondary/tertiary unitization has worked well over the years with numerous units adding production to the state, the companies involved and the royalty interest owners. Oil and condensate that would have been left in the ground has been produced economically. A variation was even allowed when it was found that by reinjecting the fields produced natural gas back into the reservoir, more liquids could ultimately be recovered. The Elk City Hoxbar unit is an example of this.

The question is now posed by Newfield's application (CD200902066-T) for "UNITIZED MANAGEMENT AND FURTHER DEVELOPMENT OF THE WOODFORD UNIT I, INCLUDING SECONDARY RECOVERY OPERATIONS" to produce primary undeveloped reserves from two spaced unconventional shale reservoirs (the Woodford shale and the Caney or Mississippian shale) and a conventional reservoir (the Hunton carbonate). They propose to do this within an arbitrarily determined 27 section (17,140 acres) enhanced recovery unit. This application lists 39 wells currently producing from horizontal legs within the Woodford shale in 25 of the sections. There are two sections with no horizontal Woodford wells so by definition they are undeveloped (9&17-2N-11E). An unusual item in their application is that any preexisting drilling, testing or completed well within the proposed unit will be allowed to continue being produced by its operator and as long as those wells individually continue to produce they will continue to be operated by the current operator and not be subject to the unit division of interest, however a certain geographic drainage area has been given to each well which varies from 17.1 acres (Wilson 1-H28) to 85.3 acres (Hedgecock 1&2H-31). This drainage area has also been increased or decreased by the gross perforated interval (distance from first to last perforation) within each well. Their application indicates they will be unit operator. The application also has wording allowing the expansion of the unit in the future. If approved as worded, this unit will set a precedent for enhanced unitization of unconventional reservoirs which, over time, will also see

applications for enhanced recovery units in conventional reservoirs drilled horizontally as granite washes, sandstones, limestones and dolomites.

RECOMMENDATIONS

1. It is recommended OK-NARO officially oppose the establishment of the 27 section (17,140 acre) Woodford I unit for several reasons, some of which are listed below:
 - OSS 52-287.4... states "each unit and unit area shall be limited to all or a portion of a single common source of supply". Their application lumps 3 common sources together.
 - OSS 52-287.4... states "source of supply as has been defined and determined to be productive of oil and gas by actual drilling operations may be so included within the unit area". They are including undeveloped sections in their application with the ability to further expand the unit at a later date.
 - OSS 52-287.4(b) ... states division of interest formulae shall "taking into account acreage ... quantity recoverable ... location ... probable productivity. .. as may be reasonably susceptible of determination". They only propose in their application geographic acreage and gross perforated interval as a method determining quantity recoverable. This does not include normal in place reserve calculations used in previous secondary/tertiary recovery units such as reservoir thickness, porosity, permeability, water saturation, etc.
 - OCC 287.8 and underlying statute ... states "a 1/8 part of the unit production allocated to each separately owned tract shall in all events be regarded as royalty to be distributed to and among, or the proceeds thereof paid to, the royalty owners free and clear of all unit expense and free of any lien thereof."

Newfield has notified pooled R.I. owners that they will be withholding from pooled R.I. owners' checks their share of all production costs as if they were W.I. owners. It is assumed they would also do this to Woodford I unit poolees.

- Newfield Plan of Unitization Art 4.1 ... states "conducting enhanced recovery operations". Does not define how a horizontal well drilled for primary reserves can be an enhanced recovery operation under the statute and OCC rules.
 - Newfield Plan of Unitization Art 9.7 use of water... why do they want free use of water below 100'? Why not pay reasonable price for any water used?
2. It is further recommended OK-NARO request the legislature and the OCC by statute and rule to separate enhanced production units into two classes - those for unconventional reservoirs defined as shales and coal bed methane reservoirs and conventional reservoirs defined as sandstones, limestones, dolomites, granite washes or mixes of the same. This will prevent the creation of extremely large units for conventional reservoirs drilled horizontally utilizing the precedent set should large unconventional horizontally drilled reservoir shale and CBM units be formed. It also provides a barrier to those wishing to merely hold large blocks of undeveloped leasehold by use of the enhanced recovery statute and rules.
 3. It is recommended OK-NARO request the OCC study a "Rule Making" that establishes unconventional drilling and spacing units based upon geologic, geophysical and engineering testimony which provides on a map the irregular shape of those units rather than the current arbitrary square or rectangular units now in use. This would be granted by the OCC based upon predrill expert witness testimony. Each W.I. and R.I. party would be informed of the unit in the operators' spacing application and once spaced could then be pooled based upon their interest as determined in the unit should they desire to not participate or

lease. A time limit should be placed on the spacing such as 1 year for the well to be commenced or the unit is null and void. In the case of establishing multiple units at one hearing then a continuous drilling clause could be placed in the order to provide continued sequential drilling before nondrilled units expire. The maximum size for these units could still remain 640 acres as is in the current statute unless an "enhanced recovery" unit is formed under that statute and OCC rule.