48TH ANNUAL
TENNESSEE OIL AND GAS ASSOCIATION CONVENTION:
NATIONAL TRENDS IN PLUGGING PROGRAMS
May 14, 2019

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INTRODUCTION AND OVERVIEW

- History of plugging
- Potential problems posed by orphan wells
- “Typical” regulatory scheme: Tennessee
- Various state approaches
  - Wyoming
  - Colorado
  - Texas
  - Ohio
  - West Virginia
  - Pennsylvania
- Options for addressing orphan wells

HISTORY

- First oil well drilled in Titusville, Pennsylvania in 1859.
- In the 1890s, Pennsylvania started initial efforts at regulating plugging wells.
- First oil well in Texas drilled in 1893.
- Texas Railroad Commission was granted authority in 1919 to regulate well plugging.
- Early state efforts were aimed at protecting the production zones from flooding by fresh water.

HISTORY (Cont.)

- The Texas regulations in 1919 stated “dry or abandoned wells be plugged in such a way as to confine oil, gas, and water in the strata in which they are found and prevent them from escaping into other strata.”
- The early efforts at regulation were aimed at protecting the economic resource; goal: preserve the oil and gas resources.
- By the 1950s, many states were regulating plugging, and most decided that tracking various information regarding wells was beneficial: operator, location, etc.
- States also began to regulate the mechanisms of plugging.

HISTORY (Cont.)

- Before the 1950s, thousands of wells were abandoned without plugging or with very little effective materials, such as cement.
- These wells typically were abandoned with no records of key information, such as location or responsible party.
- In the early days of plugging, materials such as rocks, wood, brush, paper, linen sacks, and other items at hand were used to hold a sack or two of cement.
- Over time, states began prescribing more specific requirements for plugging, such as type of material, including cement, and specific intervals for setting up cement plugs.

HISTORY (Cont.)

- In the 1970s, environmental protection became an important force in the regulation of oil and gas.
- Congress passed the Clean Water Act in 1972 and the Safe Drinking Water Act in 1974, which targeted the protection of fresh water.
- States responded by enacting new statutes or promulgating additional regulations targeting the protection of both ground water and surface water.
- States adopted more specific requirements for oil and gas operators, for example, requirements for protecting fresh water zones and preventing the flow of fluids between formations.

HISTORY (Cont.)

- Today, states typically identify appropriate materials used for plugging, including cement, drilling mud, mechanical plugs, gels, clays, etc.
- Cement typically is required or used to create a seal at the surface and between formations.
- Other materials with higher permeability and lower strength may be used between cement plugs.
- Mechanical bridge plugs also are allowed, typically in conjunction with a cement cap.

CATEGORIES OF WELLS

- Active: identified, known operator, financial assurance in place.
- Inactive: idle, shut-in, temporarily abandoned, known operator.
- Abandoned: no longer producing, not plugged or closed, not fully developed, dry hole, known operator, pose risk to oil and gas resources, pose environmental and safety risks.
- Orphan: no longer producing, not plugged or closed, operator unknown or insolvent, pose risk to oil and gas resources, pose environmental and safety risks.
- This presentation focused primarily on orphan wells.

POTENTIAL PROBLEMS POSED BY ORPHAN WELLS

- Water may enter oil and gas producing zones.
- Oil, gas, and brine may contaminate groundwater resources (aquifers and water wells), including threat to drinking water.
- Oil, gas, and brine may contaminate surface water resources (streams, lakes, and springs), including threat to drinking water.
- Oil, gas, and brine may contaminate surface and subsurface soil.
- Release of methane, a serious greenhouse gas.
- Release of other chemicals into the atmosphere.
- Fire and explosion risk to persons, property, and infrastructure.

POTENTIAL PROBLEMS POSED BY ORPHAN WELLS (Cont.)

- Land can sink or collapse.
- Threat to agricultural crops, livestock, and pets.
- Threat to wildlife.
- Threat to flora.
- Abandoned infrastructure can be an eyesore.

A "TYPICAL" REGULATORY SCHEME: TENNESSEE

- The Tennessee General Assembly has created the Tennessee Board of Water Quality, Oil and Gas (T.C.A. § 69-3-104)
- The Board has broad powers, including
  - (4) To make rules, regulations, and orders for the following purposes:

    (A) to require the drilling, casing, and **plugging** of wells in such a manner as to prevent the escaping of oil and gas out of one (1) stratum to another; to prevent intrusion of water to oil and gas strata; to prevent pollution of fresh water by oil, gas, or salt water; to protect potentially mineable coal and other minerals; and to require bond for the **plugging** of each dry or abandoned well (T.C.A. § 60-1-202(a)(4)(A)).

TENNESSEE (Cont.)

- Pursuant to the authority vested in it by the General Assembly, the Board has promulgated regulations governing oil and gas wells.
- The Board has defined two types of abandoned wells:
  - "A well that was not adequately plugged or closed at conclusion of operations such that it constitutes or may constitute a threat to public health or the environment."
  - "A well that has no owner, operator or other responsible person (hereinafter called 'responsible party') who can be located, or such responsible party has failed or refused to undertake actions, where required by law, to abate the threat." (Rule 400-51-01-.01(1))
- Second type is also called an orphan well.

TENNESSEE (Cont.)

- Types of plugging are defined:
  - Brush and rock plug (Rule 400-51-01-.01(14))
  - Mechanical plug (Rule 400-51-01-.01(59))
  - Neet Cement (Rule 400-51-01-.01(61))
- Plugging Bond (Rule 400-52-01-.01)
- Notification to Plug and Abandon (Rule 400-52-02-.04)
- Plugging wells (Rule 400-52-09-.01)
- Plug and Abandon Report (Form CN-0217)
- Comprehensive Bond Identification (Form CN-0120)

TENNESSEE (Cont.)

- Wells on the Cumberland Plateau and Highland Rim.
- Regulations revised in 2010 and 2013.
- Foreclosure of bonds is chief mechanism to address abandoned wells.
- Approximately 4200 abandoned wells that need to be plugged
- Average cost is approximately $3,000 per abandoned well.
- Since 2000, somewhere less than 500 wells have been plugged.
- Foreclosures netted approximately $2.2 million in bonding funds; General Assembly took $1.4 million of it to balance the budget.
- Fund needs more money to plug all abandoned wells.

WYOMING

- State has 50,000 abandoned wells.
- In 2014, the Wyoming Oil and Gas Conservation Commission initiated an aggressive strategy to identify and plug orphan wells.
- State has reclaimed 1,700 well sites since then.
- State significantly increased plugging and reclamation bonds.

WYOMING (Cont.)

- State ties legacy wells to prior owners when subsequent owners become insolvent and imposes liability on typically larger former owner.
- Since 2014, an estimated 4,600 wells have been abandoned on state and private land.
- Funding by production tax and royalties paid to State.
- Plugging costs are averaging between $5,000 and $7,000 per well.
- Thousands of orphan wells on federal lands.

COLORADO

- On July 18, 2018, Governor John Hickenlooper signed an executive order directing the Colorado Oil and Gas Conservation Commission (COGCC) to increase efforts to plug orphan wells and clean up orphaned sites.
- The COGCC has until July 2023 to plug high-priority sites.
- A list of sites requiring attention is to be maintained and updated annually; first list issued in August 2018 with 263 orphan wells and 365 orphan sites.
- At the time of the executive order, the State had identified 262 orphan wells to plug and 373 orphaned sites to remediate.

COLORADO (Cont.)

- State has estimated 35,000 abandoned wells; 800 orphan wells.
- Estimated cost to plug, remediate, and reclaim all sites is $25 million.
- Before executive order and increased funding, State averaging $80,000 per well and 10 to 12 wells per year.
- General Assembly authorized the COGCC to set up an orphan well fund in the 2018-19 budget and increased funding from $445,000 to $5 million per year.
- Increased funding is to be from oil and gas taxes, bonds, and fines.
- Colorado Oil and Gas Association and Colorado Petroleum Council back the State's efforts to address orphan wells.

TEXAS

- State can’t plug wells to keep up with abandonment.
- State estimates there have been more than 1.5 million oil and gas-related holes drilled in the state.
- State now has 440,000 wells, 130,000 of which are not producing, and many of these will become orphaned and the responsibility of the State.
- The Railroad Commission of Texas (which regulates oil and gas) estimates there are 10,000 orphaned oil and gas wells in the state.
- Legislature has increased funding to address increasing number of wells; Commission wants more money.

TEXAS (Cont.)

- Railroad Commission can use industry bonds, taxes, and fees to plug wells.
- In 1992, the Commission began an aggressive campaign to plug wells.
- Since 1992, the Commission has plugged 31,600 wells at a cost of $243 million.
- Worst wells, for example those that are flowing, can cost hundreds of thousands of dollars to plug.
- Reluctance by Railroad Commission, Commission on Environmental Quality, and other agencies to address some of the worst wells.
- A study concluded thirty abandoned wells polluted groundwater between 1993 and 2008.

OHIO

- State established its Orphan Well Program in 1977.
- Funded by tax on oil and gas production.
- State has plugged more than 1,000 wells.
- Over 600 known unplugged wells; hundreds of others are expected to exist but are not identified.
- Four programs for plugging wells:
  - Traditional program for non-emergency plugging;
  - Landowner pass-through payment plugging agreement;
  - Emergency services program for physical threats to the public; and
  - Cost-share grants to local governments.

OHIO (Cont.)

- In 2017, the Ohio General Assembly passed legislation, effective in September 2018, that requires the Division of Oil and Gas of the Department of Natural Resources to inspect, evaluate, and plug certain idle or abandoned wells on an expedited basis.
- If a landowner reports an abandoned well, the Division must inspect it within thirty days, issue a report within sixty days, and if the well is classified as "distressed-high priority," plug it within six months of the report.
- The legislation also allows landowners to take an income tax deduction for the Division's reimbursement of landowners who choose to plug wells on their property.
- The law also increases expenditures from the Oil and Gas Well Fund from 14% to 45% dedicated to plugging abandoned wells.
- The Ohio Oil and Gas Association supported the legislation.

WEST VIRGINIA

- Estimates are that the State has more than 4,500 orphaned oil and gas wells that need plugged and a total of 12,000 unplugged wells.
- State uses new well permit fees to plug approximately ten wells per year.
- The legislature this year passed HB 2673, which would have generated approximately $4 million per year for plugging wells; however, the governor vetoed the legislation.
- The bill would have decreased the severance tax on low-producing wells by 50 percent, and dedicated the new 2.5 percent tax to a fund earmarked for the plugging of an estimated sixty orphan wells per year.
- The legislation was bipartisan, passing the Senate on a vote of 33 to 1 and the House on a vote of 89 to 11.

WEST VIRGINIA (Cont.)

- The governor said that the $4 million annual increase is “a goal that needs to be pursued and achieved,” but he vetoed the bill because “this needed funding should come from general revenues.”
- The legislation was supported by the Oil and Gas Association of West Virginia, the West Virginia Surface Owners Rights Organization, and the West Virginia Environmental Council.
- The State entered into a consent order with Diversified Gas & Oil PLC, an Alabama-based company that owns 17,000 oil and gas wells in West Virginia. The consent order requires Diversified to plug at least 730 wells over fifteen years.

PENNSYLVANIA

- Since 1859, an estimated 300,000 to 760,000 oil and gas wells have been drilled.
- 8,300 unplugged abandoned wells have been identified.
- An estimated 560,000 wells are not accounted for.
- The Department of Environmental Protection has authority to plug orphan wells and plugged its first well in 1989 under the Orphan and Abandoned Well Plugging Program.
- The Plugging Program is funded by permit surcharges dedicated to plugging; $34 million has been spent since 1989.

PENNSYLVANIA (Cont.)

- The State estimates it will cost between $150 million and $3.7 billion to address legacy well issues.
- Legislation enacted in 2012 established the Marcellus Legacy Fund, which allocates impact fee funds to the Commonwealth Financing Authority for funding well plugging projects using the Orphan and Abandoned Well Plugging Program.
- The Environmental Good Samaritan Act of 1999 allows individuals or entities to plug wells and receive protection from civil and environmental liability.
- The State negotiated an agreement with Diversified to plug or restart 1,400 wells over fifteen years and to submit a $7 million bond to cover plugging costs, plus additional bonds of $20,000 to $30,000 per well for future wells bought or sold.

OPTIONS FOR ADDRESSING ORPHAN WELLS

- Legislative funding from existing state revenues
- Funding from increased taxes on oil and gas production
- Permit fees and dedicated surcharges
- Foreclosure on bonds
- Increased bonding amounts
- Negotiated agreements with companies still solvent

OPTIONS FOR ADDRESSING ORPHAN WELLS (Cont.)

- Executive orders prioritizing action
- Requiring earlier reactivation or plugging idle wells
- Creation of a nonprofit orphan well fund, with voluntary funding from companies, communities, and individuals
- Environmental Good Samaritan laws that provide liability protection to private actors that voluntarily plug wells

QUESTIONS?