

**Testimony of
John Hanger, Secretary
Department of Environmental Protection
before the Senate Environmental Resources and Energy Committee
Wednesday, June 16, 2010**

Chairman White and members of the committee, thank you for the opportunity to appear before you today to discuss oil and gas well drilling safety, particularly as it relates to the recent well blowout at a well pad in Lawrence Township, Clearfield County operated by EOG Resources. The benefits of natural gas production are substantial, but drilling is an industrial activity that has risks and costs.

In 2008, Governor Rendell directed the Department of Environmental Protection to increase its oversight of the exploration and development of the Marcellus Shale as drilling activity increased. DEP works everyday to ensure that the natural gas from the Marcellus Shale is produced in a manner that minimizes the risk to our environment and safety. As the department does its daily work, protecting Pennsylvania's water resources is absolutely essential.

To protect our resources and keep our communities, residents and property safe, the department, at Governor Rendell's direction, increased the size of its permitting, compliance and enforcement staff. The department added 37 oil and gas staff in 2009 and opened a new Oil and Gas Office in Williamsport to serve the needs of a region that has and will continue to see increased Marcellus Shale activity over the next few years. In addition, the Governor directed in 2010 the department to hire an additional 68 staff in response to the continued dramatic growth of the Marcellus Shale development. This year the department also opened a new office in Scranton dedicated to oversight of oil and gas drilling in the northeastern counties.

By the end of this year, the department will have more than doubled the staff responsible for natural gas permitting, compliance and enforcement.

The additional staff was paid for by raising the fees on drilling permits in 2009. The application fee had been \$100 and set in 1984 and never increased. The new fees are based on well depth and can range from \$5,000 to \$10,000 for a Marcellus well. All the revenue from fees is used to fund gas staff and oversight.

Since January 2010, the department has completed nearly 1,700 inspections of Marcellus Shale drilling sites across the state, finding more than 530 violations that range from poor erosion and sediment controls to administrative violations to spills and leaks from improperly managed or constructed containment pits. In 2009, inspectors found 638 violations at Marcellus Shale operations.

During its inspections, the department has identified problems with improperly constructed or maintained drilling waste and flowback containment pits at 29 of the 364 Marcellus Shale wells drilled this year. There have been a small number of cases where

these impoundments were filled too close to the top without a proper void in place to account for overflowing and the operator did not address the problem as directed by the department. In all of these cases, the department has taken enforcement actions to compel the drillers to comply with the law, and have assessed penalties when appropriate. Our inspectors have also forced companies to temporarily halt drilling operations while violations are corrected.

The department has also responded to spills from a range of sources including leaking fuel storage tanks, unsecured valves on fracwater storage tanks and accidents involving trucks hauling wastewater. To help ensure that frac water is properly handled during transportation, the department, in cooperation with the state police, has conducted FracNet operations targeting tanker trucks hauling frac wastewater or dump trucks with wastes from gas drilling sites. A recent operation in mid-May in Susquehanna County resulted in notices of violation being issued to six haulers for violations ranging from improper signage and authorizations to lack of a residual waste Preparedness, Prevention and Contingency Plans. One truck was leaking. These unannounced inspections will continue in areas of the state where drilling is taking place.

In addition to the increase in staff and oversight, DEP has also worked to strengthen Pennsylvania's environmental rules and regulations.

On May 17, the Environmental Quality Board approved regulations that will protect Pennsylvania's waterways from the impacts of natural gas drilling wastewater. The new regulations are necessary to ensure that drilling wastewater containing high concentrations of Total Dissolved Solids does not pollute drinking water supplies, damage industrial equipment, or endanger delicate aquatic life. High levels of TDS from natural gas drilling and other sources pose a real threat to Pennsylvania's streams and rivers. The National Association of Water Companies and many other individuals and groups across the state strongly support the adoption of the rule that the EQB approved on May 17.

The proposed regulations would require drillers to treat drilling wastewater to 500 mg/l or to drinking water quality if they choose to return drilling wastewater to our rivers and streams. Drillers have options to dispose of wastewater including: reuse or recycling; disposal in deep caverns permitted by the U.S. Environmental Protection Agency; or full treatment to 500 mg/l for TDS. Several states, including Texas, Oklahoma, New York, Iowa, Virginia, Arkansas and Tennessee, prohibit returning any drilling wastewater to streams.

On June 17, the Independent Regulatory Review Commission will meet to consider the proposed regulations.

The EQB also enhanced existing rules governing erosion, sediment control and stormwater to protect streams from the effects of new development, reduce localized flooding during heavy storms, and cut sediment and nutrient pollution. The new rules, which also include an updated permit fee structure, bring Pennsylvania into compliance

with federal requirements for: erosion and sedimentation controls and post-construction stormwater runoff; creating mandatory requirements for establishing and protecting existing streamside and riverside buffers in high quality and exceptional value watersheds; and enhancing agricultural stormwater management provisions beyond plowing and tilling to include animal-heavy use areas.

And while these regulations protect groundwater from the impacts of new development, the department also proposed strengthened regulations that mandate companies drilling for oil and gas in all formations, including the Marcellus Shale, must design and construct their wells to keep all gas contained within the wells so as to prevent gas from migrating into fresh groundwater. The EQB approved these rules that will raise Pennsylvania's well construction standards and define a drilling company's responsibility for responding to gas migration issues, such as when gas escapes a well or rock formation and seeps into homes or water wells.

A properly cased and cemented well is critical to containing gas, oil and other fluids within the well bore and out of fresh groundwater. These proposed rules make important improvements through such measures as pressure-testing casing used in Marcellus Shale and other high-pressure wells, and further defining specifications for oil field-grade cement to be used for well casing and providing new standards for the use of blowout preventers. If approved, the new regulations will also require well operators to inspect all existing wells quarterly to ensure that each well is structurally sound, and report the results of these inspections to DEP. If the operator discovers a problem with the well, such as being over-pressured or if the casing has become corroded, the operator must notify DEP immediately and take steps to remedy the problem.

These proposed regulations must now be reviewed by the Attorney General's office and will then be published in the Pennsylvania Bulletin for public comment beginning on July 3.

Poorly constructed wells by Texas-based Cabot Oil and Gas Corporation caused methane to migrate into water supplies, making those supplies unusable and endangering the residents of a nine-square-mile area near Carter Road in Dimock Township, Susquehanna County.

In November 2009, the department issued a consent order and agreement that directed Cabot to meet a March 31, 2010 deadline to fix defective cement and well casings on certain wells to prevent the unpermitted discharge of natural gas into groundwater that violated the state's Clean Streams Law and the Oil and Gas Act. The company did not meet this deadline.

During further inspections in March 2010, DEP identified five additional defective Cabot gas wells and another home water supply that has been affected by gas migration, bringing to 14 the number of impacted water supplies in the Dimock area.

Cabot failed to respond to the gas migration situation as ordered. These actions, combined with the company's previous inaction, forced DEP to take necessary and

decisive action to further protect the citizens of Dimock and facilitate a remedy to the situation.

On April 15, the department issued an unprecedented order that required Cabot to:

- By May 23, plug the three wells that are believed to be the source of migrating gas that has contaminated groundwater and the drinking water supplies of 14 homes in the region. To date, all three wells have been plugged. The department inspected each of these wells and required Cabot to complete remedial plugging work on one of the wells.
- Install permanent treatment systems in those homes within 30 days. Several homeowners have objected to the installation of the treatment systems. Cabot has agreed to continue providing water to these residences while DEP, Cabot and the families work to resolve this issue.
- Suspend the drilling any new wells for at least one year in the area impacted by gas migration.
- Pay a \$240,000 fine to the commonwealth, which has been deposited into the state's well-plugging account and must continue to pay \$30,000 per month beginning in May until DEP has determined that the company has met its obligations under the 2009 order.

In addition, the department immediately suspended its review of Cabot's pending permit applications for new drilling activities statewide until it fulfills its obligations under the order.

Following the issuance of this order, I required companies currently permitted to drill in the Marcellus Shale to meet with myself and DEP staff in Harrisburg on May 13 to further emphasize and discuss the importance of recognizing gas migration issues. With more than 100 drilling company representatives in attendance, the department reiterated that gas migration is a serious issue that can have dire consequences to affected communities and the department will not allow Pennsylvania's citizens to be put in harms way by companies that chose not to follow the law.

I will now discuss the potentially catastrophic incident that began on June 3 in Lawrence Township, Clearfield County.

At approximately 6:45 p.m. on Thursday, June 3, operators lost control of the Punxsutawney Hunting Club 36 well (also referred to as "PHC 36H"). The well is owned by EOG Resources Inc of Houston, TX. The company performing the well completion work at the time of the blowout was C.C. Forbes of Washington, PA, a division of Forbes Energy of Texas.

Well drilling began in January of this year and hydraulic fracturing operations began in March. Fracturing was completed on May 28th, and the plug placed after fracturing was being removed in preparation of putting the well into commercial production.

When the operators lost control, natural gas was released uncontrollably and fracturing fluids in the well were discharged onto the ground and 75 feet into the air for approximately 16 hours. The company shutdown all potential ignition sources and evacuated eight well-site workers until daylight. The location was secured and the road was closed to public traffic.

At 9:33 p.m. once the evacuation and securing of the site was completed, EOG began trying to contact DEP Oil and Gas inspectors who were familiar with the site, but were unable to reach them through their office phones. The company did not call the 24-hour emergency line maintained by the agency. Following several efforts to notify the county sheriff, EOG contacted Clearfield County 911 at 10:47 p.m. The county then notified local emergency responders and the Pennsylvania Emergency Management Agency (PEMA).

At 12:55 a.m., PEMA contacted DEP's Emergency Response Coordinator from the north-central regional office, at which time notifications were made throughout the agency and regional personnel were dispatched to the site, arriving at approximately 4 a.m. In addition to PEMA and DEP, the Pennsylvania State Police were also dispatched to the site along with local fire and police departments.

PEMA and PennDOT worked with the Federal Aviation Administration to impose a temporary no-flight zone in the vicinity of the well to prevent an aircraft's engine from igniting the natural gas.

By 9 a.m., crews from a well control company contracted by EOG arrived after their flight was rerouted from DuBois to Johnstown due to fog, causing a four-hour delay. By noon, workers had regained control of the well and had begun cleaning up and controlling the flowback water that had discharged from the well. DEP and EOG's environmental consultant worked to contain the frac fluids by installing an interceptor trench and sump pump to contain and remove the fluids, and prevent them from reaching tributaries to Little Laurel Run.

Approximately 35,000 gallons of the flowback and brine water was released from the well. Some fluid did seep into the ground. Sample results, as well as field monitoring conducted on June 7, preliminarily indicate that documented environmental impact as a result of the fluid release that occurred between the evening of June 3 and the afternoon of June 4 at the Punxsutawney Hunting Club #36H well site, are currently isolated to a spring and a small stream that originates approximately 1500' northwest of the well.

EOG's efforts to contain the fluid at the headwaters of this stream appear to be preventing the fluid from traveling the entire length of the stream and into adjoining waters. Additional lab samples with expanded parameters were collected on June 9 and the department will be re-sampling locations near Parker Dam State Park. Field results collected last week indicate that conductivity is beginning to decrease significantly at the spring source. Monitoring remains ongoing and future sample results may change this analysis, as there has not been sufficient time to properly come to any proper conclusion.

In the wake of this incident, DEP has taken the following actions:

- EOG Resources was ordered by DEP to suspend all natural gas well drilling activities for up to 7 days, suspend all fracing operations for up to 14 days, and post-fracing operations for 30 days until we had completed a comprehensive investigation of this accident and the company's overall operations. As of Monday, the company has been provided with written permission to resume its drilling activities, but only its drilling activities.
- DEP issued a similar order to C. C. Forbes, requiring them to halt all well-completion activities statewide and to fully cooperate with the department during the course of the investigation including making employees available for interviews with investigators and turning over all records and any written, photographic or video documentation. This order remains in effect.
- DEP retained an independent petroleum engineer with more than 27 years of experience with oil and gas operations to conduct a separate and concurrent investigation as well. DEP inspectors are examining the background, experience, training and certifications of the workers at the site. The equipment on the site is being checked to see if it was appropriate for the operation and if it was regularly and properly maintained and inspected.
- The operations of C.C. Forbes and EOG Resources are being evaluated to see if all required equipment was available and that regulatory, company and industry practices and protocols were observed. The department is also looking at inspection records for the blowout preventer and we want to see if the company had the proper and necessary equipment at the site to safely conduct well-completion activities.

At the same time we were responding to this incident in Clearfield County, a well in West Virginia operated by Chief Oil and Gas caught fire during the drilling process injuring seven workers. Preliminary investigation by West Virginia's DEP suggests that proper drilling procedures may not have been followed. The company conducting the drilling operations in West Virginia is Union Drilling. I immediately directed our inspectors to visit the six sites in Pennsylvania where that company is operating to verify that these wells are being drilled properly in accordance with our laws. Following these investigations, I can report to you that the department did not find any violations at these six sites.

All of us recognize the value and benefits of the Marcellus Shale to Pennsylvania, but we also recognize the need to make sure that drilling sites are safe – that the safety of workers, the public and the environment is not compromised.

Drilling for natural gas in Pennsylvania is primarily regulated under the Oil and Gas Act which was passed in 1984. The declared purposes of this law are to: Permit the optimal development of the oil and gas resources of Pennsylvania consistent with the protection of

the health, safety, environment and property of the citizens of the commonwealth; Protect the safety of personnel and facilities employed in the exploration, development, storage and production of natural gas or oil or the mining of coal; and Protect the safety and property rights of persons residing in areas where such exploration, development, storage or production occurs.

In addition, the Oil and Gas Act mandates that the operator construct each well with properly cemented casing so that migration of gas, oil, brine, drilling and fracturing fluids, and any other fluids are prevented from entering the fresh groundwater system or otherwise escaping from the well. This applies to all phases of well development, including drilling, fracturing, operating and plugging. As is obvious from the facts in the EOG and EB Resources incidents, as well as in less dramatic cases such as the Cabot gas migration case in Dimock, the uncontrolled release of gas, oil or fluids creates serious safety and environmental hazards.

The act also requires the use of proper safety devices must be used, including a blow-out preventer attached to a sufficient length of cemented casing, to prevent blowouts, explosions and fires. When a sudden show of gas or a pressure kick (expected or unexpected) is encountered, proper equipment and trained workers must be on the rig to handle the situation. Steel casing must have sufficient strength to withstand all the forces and pressures over the life of the well. Cement must have proper strength and properties to securely anchor the steel in the borehole.

Wells drilled through workable coal seams must be equipped with an additional string of steel casing to protect miners and the well. Review of well permit applications in areas with active underground mining operations is coordinated with DEP's Bureau of Mine Safety.

Regulations effectuating the Oil and Gas Act were initially adopted on July 31, 1987 and have undergone several revisions since then. Now it is time to update these regulations to address well integrity issues related to recent stray gas incidents and to make sure the technical requirements for Marcellus Shale are adequately addressed.

Pennsylvania's Worker Safety and Community Right to Know Act, which is administered by the state Department of Labor and Industry, requires well operators to provide DEP and workers at drilling sites with Material Safety Data Sheets on any chemicals used at the oil and gas well operation. Emergency responders, as well as municipalities, are also entitled access to this information. This information is one of the requirements in our permitting process and is public information.

The drilling industry, through the Pennsylvania Independent Oil and Gas Association and the Marcellus Shale Coalition, have a safety committee that includes two DEP oil and gas inspectors, and collaborates with Federal Occupational Safety and Health Administration (OSHA) on worker safety. DEP staff has standard safety procedures that prepare them to identify potential hazards at well sites, and are equipped with proper personal protection equipment. Certain Marcellus operators take the extra steps to notify and involve the

local municipalities, fire, ambulance, emergency responders and have formal safety meetings at the beginning of each work shift.

The members of the Senate Environmental Resources and Energy Committee very recently worked closely with DEP staff and the mining industry to craft one of the most comprehensive underground mine safety laws in the country. Your work was commendable, and all involved parties can be very proud of what they accomplished. As you review the question of safety at drilling sites, I urge to you consider some of the provisions incorporated into those mining statutes including:

- Providing DEP with clear authority to withhold new permits for companies that continue to operate unsafe operations; and
- Making companies responsible for ensuring that employees are properly trained and certified to do the jobs they are given including well control certifications.

In conclusion, the Marcellus Shale gas industry operating in Pennsylvania can and must be the very best in the world. Strong rules and enforcement combined with companies dedicated to production, environmental and safety excellence is the way to become world class.

Senator White, and members of the committee, thank you for the opportunity to speak before you today. I will now answer any questions you may have.

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