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STATE WELL DRILLERS AND PUMP INSTALLERS
EXAMINING AND ADVISORY BOARD

State Well Drillers and Pump Installers Examining and Advisory Board Meeting Minutes for May 21, 2009

Board Members Present: Chairman: Arthur Becker, Vice Chairman: Anthony Tirro, Richard Dalton, Joseph Pepe, Sr., Carol Graff, Fred Sickels, Karl Muessig, Joe Yost, and Gary Poppe

NJDEP Staff Present: Steve Reya, Pat Bono, Tracy Omrod, Michael Schumacher, Brian Buttari, Julia Altier, and John Fields

Other State Personnel Present: D.A.G. Jill Denyes, Legal advisor to the Board

Members of the Public: Mark Sussman and Harry Sussman (Earthtech Energy Systems), Gus Schultes (A.C. Schultes), Dr. Lynn Stiles (Richard Stockton College), B. Ryland Wiggs (Earth to Air), Gary Nonemacher and Tom Fleck (United Drilling, Inc.) Two Representatives from GDS mechanical

1. **Call to Order -** The meeting was called to order by A. Becker at 9:45 AM with a quorum present.

2. **Review of Minutes from March 19, 2009 Meeting -** A motion to accept the minutes without change was made by A. Tirro, seconded by A. Becker and unanimously approved. A motion to accept the executive minutes without change was made by G. Poppe, seconded by R. Dalton and unanimously approved.

3. **Certification of the April 9, 2009 Master, Journeyman, and Journeyman B Exams**
   Master Exam – A motion to certify the exam scores was made by J.Yost, seconded by G. Poppe and unanimously approved.
   Journeyman Exam – A motion to certify the exam scores was made by K. Muessig, seconded by J. Yost and unanimously approved.
   Journeyman B – A motion to certify the exam scores was made by G. Poppe, seconded by R. Dalton and unanimously approved.

4. **Review of Test Applicants for the Pump Installer, Soil Boring, and Monitoring Well Exams on June 9, 2009**

   Pump Installer – A motion to certify the list of exam applicants was made by J. Peppe, seconded by G. Poppe and unanimously approved.

Soil Borer – A motion to certify the list of exam applicants was made by A. Tirro, seconded by R. Dalton and unanimously approved.

Monitoring Well –
S. Reya informed the Board that the exam applicant list did not include one applicant, Joel Meixsell, as his application had been rejected by the Bureau of Exams and Licensing for not including the correct application fee. Mr. Meixcell's application was submitted on an old application form which did not reflect the current changes and test fee. The request from the driller's employer, Vicky L. Alberalla, President of Advanced Drilling, Inc., alleged that NJDEP staff had sent her the incorrect form and therefore the Board should allow make an exception in this case. The well permitting staff were not aware of this situation since the administrative review of the test application is handled by another DEP program, The bureau of Exams and Licensing. Incomplete forms or forms without the proper payment are automatically returned to the applicant. By the time the form was returned with the correct amount, it was six weeks past the deadline of April 1st. Despite the fact that all application packages are made up "fresh" staff did check to see if any copies of the old application could be found to substantiate the mistake. Well permitting staff checked through Bureau supplies of the application packages to see if it was possible that an old application could have been mailed out by mistake, however, none could be found. (The older versions of the application were discarded two years ago.)

Several points were covered during discussion of this request with the board members. Although deficient, a payment was with the original application for the amount specified on the out-dated application form. A copy of the current application form is readily available on the Well Permitting website which spells out the correct fee required. The Department process does require a full fee amount in order for the application to be considered complete. The candidate was deemed to have the proper education and experience to sit for the exam. A. Becker noted that because the issue is the incorrect fee amount and not with the applicant's experience or ability, the Board may want to consider allowing the applicant to sit for the exam in this case. G. Poppe made a motion to recommend that the Department allow Mr. Meixsell, and only Mr. Meixsell, to sit for the exam by accepting his application based on the check amount made out for the former amount of the test. However, all Board members agreed that (future) applications without payments should be rejected. J. Yost seconded the motion. A. Tirro, J. Pepe, C. Graff, and K. Muessig were in favor of the motion. R. Dalton opposed the motion, stating that a current application containing the correct fee amount could have been downloaded from the Bureau's website at any time and submitted prior to the deadline. F. Sickels abstained from voting on the motion. A. Becker also abstained citing a potential conflict of interest based on his long-standing relationship with the requester. The motion passed. Therefore, Mr. Meixsell's name was added to the exam applicant roster with a status of "approved."

A. Motion to approve the Monitoring Well Driller exam applicant roster, now including Mr. Meixsell, was made by K. Muessig, seconded by C. Graff and unanimously approved.

As a side note, S. Reya explained that the Department will be disbanding the Bureau of Exams and Licensing formally on July 1st. The Bureau of Water Systems and Well Permitting will assume most of the duties previously performed by that Bureau for processing applications for all the well drilling and pump installer license examinations, including the administrative review process.

5. **Licensing Topics** –
Harry Sussman, Earthtech Energy Systems, addressed the Board to expand upon several issues he had detailed in a letter he submitted to the Board regarding the geothermal well drilling industry. H.

Sussman discussed his concerns regarding New Jersey's stringent licensing requirements, high exam failure rate and long wait time between exam cycles for the applicants who fail the exam. He felt that a system similar to that of the National Groundwater Association should be instituted for drillers in NJ. H. Sussman also supported the hiring of an outside company to physically administer the exams more frequently, thereby increasing the numbers of drillers at a faster rate. He suggested that the Board and the Bureau look for such alternatives in order to revise the current licensing program, which he believes is prohibiting eligible individuals from entering the industry.

6. **Guest Speaker: Dr. Lynn Stiles, Richard Stockton College** – Dr. Stiles discussed the geothermal system at Richard Stockton College as well as the general benefits and concerns of geothermal systems. He noted that he believes there are three problems with the installation of geothermal systems in New Jersey:
   - There is too much heat being put into the ground as systems are often not designed with balanced heating and cooling loads
   - There are not enough licensed drillers to perform the work
   - Utilizing one of the NJDEP approved anti-freeze solutions to prevent the circulating fluid from freezing in winter months affects the efficiency of the system.

   Dr. Stiles also discussed the fact that the system that was installed at Richard Stockton College had actually increased the ambient groundwater temperature by 14 degrees Fahrenheit. He also indicated that they had performed studies that showed that the temperature change could be documented by the fact that the thermal plume had moved 300' horizontally in five years. He added that the temperature change at that lateral distance was only a half a degree, but it was the maximum extent at which they had observed a change in ambient groundwater temperature as a direct result of their closed loop geothermal system.

   Dr. Stiles also discussed the duration of thermal response tests. He stated that thermal tests conducted on one loop should be performed for at least 48-50 hours to yield accurate results. He also indicated that thermal tests for the systems installed for public schools are often performed over and over, which add significant cost to the design and installation of such systems. He believes that the test results should be public record, as public funds often pay for such jobs. He indicated that the tests would not have to be performed repeatedly if a test had already been performed at a site with similar strata.

   Regarding DX geothermal systems, Dr. Stiles stated that he believed that the Department should require that the systems be grouted with one of the approved geothermal grouts. He added that the systems would be more efficient with the inclusion of such grouts so the installers would have an incentive to use them. Dr. Stiles also said that he would like to see documented proof that corrosion on the copper tubing would not be significant. He believed that sacrificial anodes could be installed to inhibit such corrosion, however, determining the appropriate amount and location of the anodes could be difficult to regulate. Specifically, he did not know whether the sacrificial elements should be installed every couple of feet on the loop or only at the top. He did believe that a system that would be both reliable for the homeowner and environmentally safe would be possible with proper cathodic design. He also added that good design would be important with such systems, however, it is no different than the importance of a sound design when dealing with water based closed loop systems or open loop standing column systems.

   A. Becker and Dr. Stiles discussed the potential problems with an underground release of refrigerant and the fact that very little documentation exists on what would happen should such a release occur. Dr. Stiles said that the grout utilized for the 3.5 acre, 1600 ton capacity, water based closed loop system at Stockton College was bentonite grout without the addition of any thermal enhancement

compound (silica sand). He added that he believed that the two grouts that would be appropriate for DX systems would be T-111 grout and thermally enhanced bentonite-based grouts

7. **DX Geothermal System Presentation, B. Ryland Wiggs, President of Earth To Air Systems (ETA)–**

B. Wiggs discussed the installation of his DX systems, which he hoped could ultimately be approved for use in New Jersey. The Earth to Air DX geothermal system uses T-111 grout to insulate the copper linesets. The refrigerant utilized in his systems is R-410A, however, the system would also work with R-407C. B. Wiggs indicated that neither refrigerant contained ozone-depleting chlorofluorocarbons (CFCs). He also stated that 410A requires higher system pressures in order to work, which necessitates additional compressor power than the earlier DX systems that use the older (R-22) refrigerants. B. Wiggs stated he is not aware of any leaks in one of his systems. He also informed the Board that his systems were unique in the fact that they had the option of coating the loops in a protective plastic coating. His company also requires the installation of grout around the coating, thereby creating a double layer of protection. A. Becker asked what the typical borehole dimensions would be for such an installation. B. Wiggs stated that the diameter is generally 4 to 5.5 inches. The diameter of the copper lines is 3/8" for the liquid line and ¾" for the vapor line. He indicated that the loop could be installed in boreholes up to 500 feet. B. Wiggs said that the polyethylene coating on the copper is a .1" thick on the "upper" part of the loop. He also stated that his company no longer uses any form of cathodic protection, rather they have elected to use the polyethlylene sleeves in areas with pH values that are too low or too high.

A. Becker asked B. Wiggs where his systems are typically installed. They are installed East of the Mississippi River and in Australia B. Wiggs said that. He also stated that they have installed close to 300 systems currently without any advertising, however, they have not sold very many systems in the U.S. A. Becker asked what percentage of those systems contained the polyethylene protective sleeve. B. Wiggs stated that only one system had been installed with the sleeve. He also added that copper failure would generally be due to the copper rubbing vertically within the borehole. Therefore, he suggested that New Jersey DEP require that all DX systems include T-111 grout and a polyethylene sleeve around the copper. B. Wiggs said that another benefit to his system is the fact that they drill deeper boreholes than typical DX system. He stated that this allows them to install systems while utilizing very little surface area at ground surface. He indicated that one 500' deep loop would have a capacity of five tons.

B. Wiggs then explained the fact that the U-bend of the copper loop is inserted in a protective plastic container, which is filled with T-111 grout prior to insertion into the borehole. He said that the only joint is in the bottom bend and it is encapsulated within the protective shell. The balance of the copper on each side of the loop is completely seamless according to B. Wiggs. A. Becker asked if it would also be possible to run the copper line seamlessly into the building that is being serviced. B. Wiggs stated that it would be possible to do so simply by ensuring that the copper reel is long enough to reach the building. R. Dalton asked what grade of copper is used in the ETA systems, to which B. Wiggs responded that it was L grade copper in accordance with ASTM specifications. He said that the copper is refrigeration grade and has thicker/heavier walls than standard copper tubing. A. Becker requested installation photos of the ETA systems and B. Wiggs said that he would be glad to submit photos to the Board and/or Bureau.

G. Poppe and S. Reya both asked for clarification on how the polyethylene sleeve would be installed on the U-bend, as two different diameters of copper tubing are used on each side of the bend. B. Wiggs indicated that the bend could be covered with polyethylene, which would be shrink wrapped around the U-bend.

8. **Review of Journeyman Exam Applicant Qualifications for Matthew Lowry, A.C. Schultes, Inc.-** S. Reya discussed an application he had rejected for the April 9, 2009 Journeyman Well Driller Exam. He indicated that he had rejected Matthew Lowry application because his work experience, as described on his application, did not meet the minimum requirements specified in the regulations. S. Reya stated that in his March 16, 2009 letter to Mr. Lowry, he cited the reason for the application rejection as the following:

> Section B - Work Experience
> Your duties and responsibilities, as listed in this section of your application, were "worked as helper at Howell site, drilling test wells, observation wells and running aquifer test." The five wells you listed on the two reference questionnaires were all drilled between August 15, 2008 and October 10, 2008. Additionally, the wells were all drilled for the same owner and were located on the same block, lot and street address. Your documentation confirms your drilling experience with regard to the "Howell" site, however, there is no information regarding your work experience for the remainder of the time your employer, A.C. Schultes, Inc., has employed you. Therefore, the Bureau of Water Systems and Well Permitting is unable to confirm that you have three years of well drilling experience, as is required by N.J.A.C. 7:9D-1.8(b)i.

Mr. Lowry responded in his letter, dated April 6, 2009, in which he provided further clarification of his experience which dated back almost five years. Mr. Lowry identified approximately twelve duties he performs on a daily basis. Some of the duties identified were: acting as a participant, observer and supervisor during the drilling a borehole, setting, gravel packing and grouting wells, performing geophysical logging and sieve analyses. Additionally, Mr. Lowry cited the definition of a Journeyman Well Driller in the regulations and added, "many of the items that I listed above for the work that I perform are not in the field. I have not stood at the controls of a drill rig every single day for three years. There is not one Journeyman applicant who can say they were at the controls of a drill rig every day for the last three years. One can argue that my experience with A.C. Schultes performing all of the above items, different percentages every day, every year, is better than an apprentice who is on the job site every day with a shovel in his hand." Mr. Lowry, therefore requested reconsideration of his application for the following (October 2009) exam. August Schultes, IV stated that he agreed with Mr. Lowry's assertion that he is qualified to sit for the Journeyman exam. A. Tirro asked whether Mr. Lowry had actually worked in the field performing the duties he described in his letter. Mr. Schultes said the he had performed all of the listed duties, including working onsite, however, he is does not work in the field every day. A. Becker, J. Yost and G. Poppe all stated that based on the information detailed in Mr. Lowry's letter, he appears to be a qualified applicant. They all agreed that the information specified in his original application did appear to be deficient with regard to the three year well drilling experience requirement. F. Sickels stated that the applicant was clearly qualified take the exam. He made a motion to allow Mr. Lowry to sit for the next Journeyman exam based on the revised information that he submitted to the Bureau. The motion was seconded by J. Yost and approved unanimously.

A. Schultes asked about the status of adopting revisions to the current regulations; he had submitted written comments to the Department when the regulations were amended in 2007. At that time, however, he was told that "technical changes" could not be made until a later date. P. Bono stated that the current regulations do not expire until 2012 and that staff would be working on revisions in about 18 months before that.

9. **Licensing Topics –**
Elevator Shaft drilling- S. Reya discussed how Tom Fleck, Field Superintendent of United Drilling, Inc., had recently contacted the Bureau with concerns regarding the construction, licensing and

permitting requirements for elevator shafts. He also said that the "well" definition specified in section, 1.5, of NJAC 7:9D categorizes an elevator shaft of a well, therefore, it is subject to the permitting, licensing and construction requirements of the regulation. Elevator shafts are categorized as category 4 wells in NJAC 7:9D-2.1 and are subject to the construction requirements of such wells. S. Reya noted hat a search of the Bureau's database has yielded less than ten elevator shaft permits in the last ten years indicating a clear lack of compliance and enforcement of such requirements. It was noted that drilling elevator shafts is such a specialty that these individuals would never be doing any other type of drilling; whereas the Journeyman license enables the driller to install many different types of wells. T. Fleck raised the conflict that experienced elevator shaft drillers would never qualify to take for the Journeyman or Journey B exam; especially in view of the requirement that they work under the supervision of a New Jersey Licensed well driller. T. Fleck mentioned that the experience requirements detailed in the regulations make it nearly impossible for companies performing these services to acquire the proper licenses. He also noted that without the license, a company would be prohibited from applying for drilling permits for elevator shaft.

T. Fleck and Gary Nonemacher, President of United Drilling, brought up the fact that in the Subsurface and Percolating Waters Act (specifically, 58:4A-16), it states that "the department may license without examination, upon payment of the required license fee, applicants who are duly licensed under the laws of any other state having requirements deemed by the department to be at least equivalent to those of this state." They questioned whether they could be issued a license based on the fact that they had been previously licensed in Minnesota and in two counties in Florida. Both men stated that Minnesota was the only state they were aware of that had a state license and written exam solely geared toward elevator shaft installation. They asked whether a New Jersey License could be issued based upon reciprocity since they had demonstrated that they met the requirements of Minnesota's program. S. Reya also brought up whether or not it would be possible to create a certification for elevator shaft drillers, since they do not actually drill the remainder of the well types afforded a Journeyman/Journeyman B driller. He noted that he had once been informed that certification types had been done in the past, as regulation changes were not required if the category was a certification not truly a license. J. Denyes stated that she would look into the regulations to determine if this was possible, however, she did not believe a new category could be created if it wasn't referenced in the regulations. The United Drilling representatives also stated that they would sign some type of agreement/affidavit in which they would agree to only drill elevator shafts if issued a Journeyman Class B license. J. Denyes said that she would have to look further into the applicable laws and regulations to see if the certification, conditional license or licensing without exam due to an equivalent out of state license would be possible. P. Bono and S. Reya will also work with J. Denyes to see if there is any conflicting information between the well construction regulations and Department of Community Affairs regulations, which regulate elevator construction.

Changes to Licensing Program- P. Bono discussed potential changes to the licensing program. She asked the Board for feedback on whether the Bureau should consider an approved exam applicant to be approved for a one-year period. By instituting such a system, she believed that the Bureau would no longer have to reject applicants who are now being rejected due to application deficiencies despite the fact they may have already taken the exam multiple times. P. Bono said that the Bureau was considering instituting this system to reduce the number of applicants who are rejected for deficient applicants and it would also reduce the amount of staff resources spent on processing the applications if they were approved for a full year. These additional staff resources could potentially be used to administer all well drilling exam categories on all four testing dates throughout the year. She also stated, however, that the regulations allow an unsuccessful applicant to review their exam within 30 days of receipt of their scores. She felt that this poses a problem, as applicants would then be reviewing weeks prior to re-taking the exam. J. Pepe and C. Graff both stated that they did not believe applicants should be afforded the opportunity to review their exams. Since the regulation

allows it, however, The Board agreed to let the test applicants take the test with same application. The applicant would be required to submit a full application again after a one-year period. The Board members also suggested that if an applicant chooses to review the exam, he or she should be required to sit for the exam cycle that is six months after the original exam. This would prohibit applicants from reviewing their exam and sitting for exams on back to back cycles. P. Bono also said the Bureau will ultimately be looking for a long term solution in which the administration of the exams is handled via an outside part (as has been discussed at previous Board meetings).

10. **DEP Program Updates** – P. Bono said that there are some new well search tools on the Bureau's website. The well search allows users to view basic information about wells that have been installed on a particular property. It does not allow the user to print well permits, records or decommissioning reports. She also said that all approved Board minutes will be posted on the website shortly. P. Bono also noted that the Bureau's electronic permitting program, EPermitting, has been turned on and has been utilized successfully by several well drilling companies as well as the New Jersey Geologic Survey. She also said that the Bureau will soon be sending out another newsletter, which will contain EPermitting updates. Additionally, she noted that Michael Schumacher from the Bureau had recently attended the New Jersey Groundwater Association (NJGWA) meeting to train members on how to use the program. A. Becker brought up proposed study material revisions, which have been in the works for several months. He stated that he may want to work with NJGWA to look into putting out a more comprehensive guide and practice test, not simply a study guide that references other texts. He also expressed concern regarding the cost of some of the referenced study guides, such as Johnson's Groundwater & Wells. Some Board members, however, felt that any applicant who wished to work in the industry should invest in such materials regardless of whether they need it for the exam or not. A. Becker asked S. Reya whether there were any updates on the Hardin Bi-Sec geothermal pipe. S.Reya stated that he had not received any additional information from Hardin since the issue was last discussed with the Board. A. Becker also asked F. Sickels whether he had drafted a response letter to the DX community that had proposed installing systems in New Jersey. F. Sickels stated that he has written many letters stating the Bureau's position on DX systems. He and P. Bono also discussed mechanisms for approving DX systems, provided the technology was deemed environmentally safe. J. Denyes noted that she believed the approval of such systems would not be possible without a regulation change. F. Sickels added that they had explored waivers and pilot programs, however, neither approach was appropriate, and he too believed a change to the regulation would be required.

11. **Adjournment** - A motion to adjourn the meeting was made by G. Poppe, seconded by C. Graff and unanimously approved at 3:52 PM.