Representing the Interest of America's Industrial Energy Users Since 1978

Environmental, Energy & Technical Committee Meetings

September 11-12, 2012
Radisson Hotel, Reagan National Airport
Arlington, VA
(703) 920-8600

M I N U T E S

TUES-WED September 11-12, 2012

Technical Focus Group Session

New Advanced Technologies, Moderator, **Frederick (Fred) P. Fendt**, The Dow Chemical Company

Monitoring and Control of Combustion Processes via Digital Imaging - **John McGregor**, ProSensus, Inc.

ProSensus, Inc. develops control systems that extract information from multivariate processes. Digital imaging is one technique that can be used to determine the condition of a particular space. Satellite imaging uses this type of technology. The Landsat system uses 4 wave lengths (red, green, blue, and near infrared). Employing statistical methods, the image can be reduced to a 2 dimensional space. Each pixel of the original scan can be plotted according to the similarity of its spectral content. Then, features can be segmented according to their spectral properties. These same techniques can be used to monitor the combustion process.

A DuPont boiler in Canada that burns waste liquid fuel streams. An analog camera was in place to observe the burner. Any particular flame image can be analyzed to create a similar 2 dimensional plot. The variability in the flame is shown to be rather steady in terms of the statistical analysis. The luminous flame area can be isolated and analyzed for brightness, area, etc. Data sets can be correlated from this type of information including steam flow, NOx, SO2, and heat content of the fuel. A cement kiln was also tested. The kiln flame should provide information about the energy efficiency and flame stability/flame length.

These features can be related to exit temperature and other outputs. In one particular kiln, the final exit temperature can be predicted 2 hours in advance. In a basic oxygen furnace, it is desirable to predict the end point carbon in the carbon steel. The goal is to reduce oxygen consumption and minimize the number of carbon samples. Using the same process, it was possible to model the process to show the approach to the end point.

At the Atikoken power station in Thunder Bay, Ontario some testing was done on a coal fired boiler using coal and biomass. Three high temperature cameras were used to capture the flame images. Cameras can determine whether or not a burner bank is balanced at low loads. Unfortunately, the power station was shut down and the full test program was never completed. However, from the image analysis, the air/fuel ratio at each burner could be detected.

In the snack food industry, a moving belt of snacks is monitored by a camera. The seasoning level, texture, dryness, etc. can be measured. The camera is actually used to control the overall process. The difficulty for coal fired units is that the actual flow to each burner tip is not controlled separately, making it somewhat more difficult to actually use the information for control.

Control Optimization by AAI-JMP Engineering - **Denis Oravec** , AAI-JMP Engineering

The basic topic is optimization of steam generation assets. AAI-JMP Engineering has successfully completed over 300 power house projects. The goal is to meet the steam and electrical demands for the lowest cost while operating smoothly and meeting environmental requirements.

There may be a number of boilers feeding headers, as well as multiple steam turbines that recover some energy as electricity. The operating priorities are to maximize steam flow on a prioritized fuel basis (cheapest fuel, cleanest fuel, etc.). The steam needs to be distributed economically amongst the various devices and headers. A rule based supervisory control system utilizing multi variable, prioritized constraint control strategy constitutes the overall approach. Energy management includes boiler load allocation, turbine load allocation, coordinated pressure control, tie line control, and economic load shedding. Multi fuel boiler optimization includes independent fuel masters, inferred BTU control, and coordinated load changes. In addition to all of the other variables, emissions and cost constraints are added by evaluating an incremental emissions and cost for the next unit of steam.

The hierarchy starts with global constraints. The plant master matrix control can then use the incremental information to balance the various boilers in operation. The real challenge is not at steady state, full load operation, but as the plant responds to various demand levels throughout the load range. Rule based constraints are used for furnace draft, drum level, oxygen, CO, NOx, fuel flow, steam limits, boiler master limits, and others as required.

Looking at oxygen and air distribution, the CO formation is related to low oxygen levels. However, the relationship is not consistent as the mixing in the system is also important. As we add systems to control the operation of the boiler, we take away more of the manual operation from the boiler operator.

Optimization of performance, including efficiency and emissions, will require control and automation systems that anticipate and correct for situations that may result. The "rules" will have to be extended to provide process constraints for emissions and efficiency as well as steam flow. The benefits will include optimized fuel use, optimized emissions, improved demand side operations, and greater stability of operations. These systems are easy to integrate with existing controls. The system is assembled with function blocks so that any network of blocks can be applied to a plant to provide the necessary control.

A Cement Substitute from Fly Ash - **Wayne Fried**, Ash Improvement Technology

AIT has a process to produce a cement equivalent from fly ash. In China the ash production is 400 million tons/yr or more. The US generates 130 million tons/yr. India generates over 170 million tons/yr. Fly ash has similar properties to Portland Cement and some fly ash is sent to cement plants.

The CleanCem process is a quality controlled process that takes advantage of temperature zones in a furnace to add materials that react with the fly ash to create a cement substitute.

The process creates a building material which avoids CO2 emissions. The product also has a lower carbon content. Portland Cement produces 500 lb of CO2 to make 600 lb of cement. CleanCem uses 240 lb of fly ash and 140 lb of Portland Cement to produce 400 lb of product with the same properties as the 600 lb of cement. Only 130 lb of CO2 are produced.

Particle size, injection temperature, and chemistry are the key variables of the process. Target attributes are strength, durability, and LOI. The process can be used for all coal fired boilers including PC and CFB units. The end product is a cement substitute that meets ASTM and ASME requirements. In one unit firing PRB and bituminous coal, recycled materials were evaluated both for boiler impacts and cement properties. On a strength basis, a 30% substitute of CleanCem binder for Portland Cement produced a compressive strength that was 43% stronger than Portland Cement. With a 60% substitution, the cement was 72% stronger.

Boiler efficiency is not impacted. Some sulfur is captured in the product. There may be some mercury capture as well. There was a temperature increase and a NOx increase accompanied by a reduction of carbon in the ash (an additional 0.2% carbon combustion). At a fluid bed unit, there was a stated goal to reduce LOI from 7% down to 4%. At the site, the actual LOI was 8.4%. With the injection of material, the LOI was reduced to 3.9%. More air had to be added to the system due to the increased carbon combustion. This was a bubbling bed boiler without limestone injection. This improved combustion efficiency translated into improved boiler efficiency. Overall, fly ash can be converted to a high value substitute, with reduced CO2 emissions, reduced SO2 emissions, and improved combustion efficiency.

PerNOxide Technology for NOx Control - **Bob Crynak**, FMC Corporation

The PerNOxide technology uses hydrogen peroxide for NOx control. FMC is a leading producer of hydrogen peroxide. They have recently set up a new Environmental Solutions Division which will market this process as well as sodium based additives for dry injection systems. This technology fits into a 30 - 70% NOx reduction technology with minimal capital investment.

This patented technology uses hydrogen peroxide to oxidize NOx and mercury for further capture. At elevated temperature, the peroxide breaks down into OH radicals in the gas phase. The free radicals attack the NO in the gas to a more soluble form of NOx (all the way to N2O5 which dissolves to form nitrates). Any wet scrubbing system will capture the oxidized material. The peroxide is injected into a duct between the economizer and the air heater.

The peroxide is shipped as a 50% water solution, but is diluted for injection into the duct work. Compressed air is used for atomization in a 2 fluid nozzle. While the higher oxides of nitrogen are soluble, they do form acids and need to be neutralized by alkaline additives. Wet scrubbers will capture about 70%. Dry scrubbers will capture about 50%. The first full scale demonstrations were able to show 80% oxidation, but only 20 - 30% reduction.

FMC has teamed up with URS for assistance on the wet scrubber side. Forced oxidation scrubbers interfere with capture of the nitrogen gases, while sulfites (non-oxidized) helps with the capture.

Thus, lime, magnesium, inhibited limestone, and natural oxidation limestone scrubbing systems are all acceptable. Mercury is also oxidized and can be captured in either the particulate or scrubbing system.

The system is relatively low in capital cost. The reduction level is somewhat greater than SNCR. There is no catalyst (and thus no catalyst poisoning). The system is close to commercialization. There is a risk of NO2 escape (which forms a brown plume) and SO3 formation. There is also a waste stream management issue to assure that there are no sulfur/nitrogen interactions that may need to be treated. A trial system can be arranged that includes the tanks, pumps, controls, lances, and testing devices. A fully transportable, skid mounted system is utilized.

The system can be used as a standalone technology, but also in conjunction with Low NOx burners, over fired air, SNCR, and SCR systems. The capital cost ranges from $1 - 5 million (site variations) and the operating cost is estimated at $2500 - 3500/ton of NOx removed. FMC is looking for industrial demonstrations for both wet and dry scrubber applications.

Fisonic Pump Technology - **Carl Bozzuto**, Consultant

Carl Bozzuto reported on technology for a pump with no moving parts. The pump works on the basis of the fact that the velocity of sound in a two phase flow mixture is much, much less than the velocity of sound in either phase separately. In the case of steam and water, the velocity of sound is on the order of 1000 ft/sec in steam and 300 ft/sec in water. The velocity of sound in the two phase mixture is as low as 30 ft/sec. Thus, if the flow can be directed through an appropriately designed nozzle, the flow will go supersonic. In the pressure recovery zone, the pressure of the resulting hot water will be higher than either the pressure of the steam or the pressure of the water. The temperature of the resulting hot water will be the mixing cup temperature.

Several units have been installed in the US, China, and Russia. The Con Ed building in New York is available for anyone wanting to see the unit in operation. The device mixes on a molecular level, so that mixing applications are another possible use as well as condensate returns, feed water heating, and hot water applications.

ENERGY COMMITTEE SESSION

Frederick (Fred) P. Fendt, The Dow Chemical Company, Energy Committee Chairman
Robin Mills Ridgway, Purdue University, Energy Committee Vice-Chairman

Introductions - **Bob Corbin**, CIBO Member Services Consultant

Fred Fendt opened the Energy Committee meeting. **Bob Corbin** introduced the new members and guests for this meeting. The usual "round the table" introductions were done. **Bob Bessette** gave the anti-trust admonition.

DOE EIA Natural Gas Outlook - **Philip Budzik**, US EIA

In trying to understand market prices, no one has been able to really explain the extremes of prices in either oil or gas, whether the high price or the low price. Currently, natural gas is in an

extreme low price situation. At $2.50 - $2.80/MMBTU, dry gas production revenues cannot cover a significant portion of the well drilling and completion costs. Ultimate production forecasts for a well vary by a factor of 3.

While there are fewer "dry holes" today, there are many variations in the production rate. It is more likely that there will be a "low production" well. The IRR ranges from 0 - 15% at $4/MMBTU gas. If full production costs were taken into account including royalties, interest, and taxes, a well head price in the range of $5/MMBTU - $6/MMBTU. Assuming another $1/MMBTU to get the gas delivered to major consumers, the "so called" city gate gas price would need to be $6/MMBTU - $7/MMBTU.

The current low gas price resulted from the industry interest in gas in the 2006 - 2009 period when gas prices were considerably higher. As a result, drilling commitments were made that required a certain amount of drilling in order to preserve the leases. In addition, the relatively high price of oil has led to increased drilling activity for oil. In a tight oil formation, there is a need for natural gas to be in the reservoir to provide a driving force to move the fluid to the well bore. The production of a tight oil well generally results in 1/3 methane, 1/3 natural gas liquids, and 1/3 oil. As a result of this additional production, NGL prices have started to decline. NGL traditionally was on the order of 60 - 70% of oil price. Recently NGL prices have dropped below 50% of oil price. Thus, the industry is not making any money on gas production right now. These low prices cannot be maintained.

The next question is how long the low prices will last. There are a lot of variables. The low price of gas has caused a lot of utilities to use gas instead of coal for generation. This has put some kind of a price floor on the price of gas. Production in many of the fields has started to flatten out or decline. Only the Marcellus is still growing. This is primarily due to the location of the Marcellus near the Northeast markets. This saves most of the $1/MMBTU transportation cost from the Gulf coast to the Northeast. Natural gas prices are largely driven by the marginal cost of new natural gas production. As lower cost gas deposits are depleted, the marginal cost of production increases over time. Technological developments serve to moderate the cost increase.

Cost projections assume rational market behavior. Real markets are not so nicely behaved. There are boom and bust cycles. Going forward, shale gas and tight gas are projected to supply as much as 70% of the gas production by 2035. Off shore gas in deep water has very significant up front costs. Conventional wells have pretty much been developed. There remains Alaska and shallow water drilling. By 2020, the US will become a net exporter of natural gas, most of which will go to Mexico. Even with the net exports, some 1 TCF will come from Canada and some LNG will still enter the country.

Scenario testing was used to examine some of the implications of the projections. The Low Estimated Ultimate Recovery case assumes 50% lower production than the reference case. The high case assumes 50% higher production. When the recovery level is reduced, the cost goes up because the initial drilling costs have to be spread over less production. The reference case is based upon current technology for production. Projections are based on constant dollars (i.e. no inflation). With Natural Gas the range of $6 - 7/MMBTU, an economic case can be made for a natural gas pipeline from Alaska. There are immense gas resources in Alaska.

World Outlook for Natural Gas - **Bill Cooper**, Center for NCLNG
Mark Eisenhower, PACE Global Energy Services

The cost of a new LNG export facility ranges from $5 - 10 billion. The Center for LNG is an association of LNG producers, shippers, terminal operators, and energy trade associations.

The DOE and the Federal Energy Regulatory Commission (FERC) are the two main permit authorities. The Natural Gas Act provides the statutory authority. A permit must be issued unless the objectors can show that a project would not be consistent with the public interest. The FERC has the environmental impact responsibility. The DOE policy guidelines have attempted to "define" public interest, but mainly pointed out that the market and not the government should set prices. The first permit approval was issued to Cheniere Energy in the past year. The DOE has asked the EIA to do a study looking at price impacts from LNG exports. They have also commissioned their own study. The results were supposed to be issued in March, but still have not come out. Other studies have indicated that the limited number of LNG export terminals will not be able to export enough natural gas to impact the US price of gas.

While the projected price of natural gas in the US is likely to increase, this projection is primarily based on the marginal cost of production rather than the impact on the small amount of gas that will be exported.

Mark Eisenhower of PACE noted that since 1970, generation planners have been nervous about natural gas supplies. However, we are currently at an all time high in gas production. PACE has used data from 10 heavily gas weighted shale developers (more than 70% shale projects). Since 2005, these businesses have not been sustainable without capital injections. These projects have not generated enough cash to sustain the operations. However, the addition of proven reserves as a result of drilling adds assets to the balance sheet. This makes the company more valuable.

The process starts with leasing land from land owners. Most of these leases require either royalty payments for production or payments in lieu of drilling and production. When the wells are drilled and production proven, assets are added to the balance sheet. With the high level of storage at the current level, some producers are selling the assets to bring in cash. With the hot summer, natural gas fired generation has increased substantially. This has taken up significant amounts of gas supply and set a floor on gas prices.

With regard to LNG prices, most contracts are based on a relationship with the price of oil. Spot prices in Europe are at $10.25/MMBTU. Spot prices in Asia are at $13.50/MMBTU. Thus, producers in the US would like to export LNG to these markets. While the price differential is attractive, there are other suppliers that would like to tap these markets. There are a lot of shale gas resources in the world. If these are developed in response to high prices in Asia, the question will become how quickly contracts can get off prices based upon an oil index. The market distorting effects of the shale boom are still with us, but ebbing.

Power, coal, and gas industries in each sector will continue to economically self optimize. These differing objectives and decisions and their implementation time lines will continue to pull us away from the imaginary "equilibrium" line (ie boom/bust cycles will continue). In any case, the current low price is not sustainable. The LNG exports will compete on price in a world with growing gas supply. Pipelines will generally be more economical than LNG. Conversion to liquid consumes over 10% of the input energy to the LNG facility. There is further energy involved in shipping and regasification at the import terminal.

Energy Assessments and Boiler Tune Up Activities

Frederick (Fred) P. Fendt, The Dow Chemical Company

There have been no new developments in the requirements for Energy Assessments and Tune Ups since the last time we met. The final rules have not been issued as yet.

ENVIRONMENTAL COMMITTEE SESSION

Maxine D. Dewbury, The Procter & Gamble Company, Environmental Committee Chairman
Robert (Rob) Kaufmann, Koch Companies Public Sector, LLC, Environmental Committee, Vice-Chairman

Environmental Committee - **Maxine D. Dewbury**, The Procter & Gamble Company

The minutes of the last meeting were approved as written. The anti-trust admonition is still in effect.

Boiler MACT – **John C. deRuyter,** E.I. DuPont de Nemours & Company

CIBO comments supported by data were submitted. There were 2 database files from EPA. The first version was issued in 2010. The first one had the questionnaire results. The second one has emissions data and is 680 MB. In the database, are 1742 units including coal, biomass, oil, and gas2. The EPA has decided that the MACT floor is a prescriptive limit rather than a control technology limit (in spite of the name). URS did a cost study for CIBO looking at potential compliance with the limits.

For biomass units, there was a high percentage of units that could comply with the limits. For coal units, a very limited number of units can comply. None of the oil fired units can meet the limits, either light oil or heavy oil. The work practice standards for Gas 1, limited use, startup/shut down, and dioxin/furan are major improvements. We still need more time to comply. The rules are costly and disadvantages fossil fuels. More flexibility is needed in emissions averaging. Low sulfur distillate oil should be treated similar to natural gas. Better definition of gas curtailment is needed. More flexibility in emissions monitoring is needed.

Fuel variability factors (FVF) only account for variability on a marginal basis and needs improvement. The FVFs for mercury and HCl on solid fuels is around 1.7. However, the FVFs for the top 5 performers were more in the range of 4.5. With the addition of 3 more units to the top performers and the use of FVF, the mercury limit goes to 5.6 lb/trillion BTU. The HCl limit goes to 0.021 lb/MMBTU.

For biomass unit, if the new limits are adopted, substantially more than 90% of the units will meet the standards with little or no cost. For coal units, PC and stoker units can only meet the HCl with 30% and 20% of unit respectively. Very few oil units can meet either the mercury or chloride standard. The total costs for chloride control are about $6 billion. The total cost for mercury control is about $640 million. EPA set work practice for CO in the MATS rule. Additional data showed little correlation of VOC with CO once the CO is less than 100 ppm. It has been suggested that industrial units be given similar treatment. At least, ultra-low CO limits are not justified. The cost impacts for CO work out to $2.2 billion. For particulates, the coal units were "re-bundled", but the biomass and

liquid units were kept separate. Roughly half of the biomass units needed to upgrade the PM controls. A similar situation exists for coal. The oil units only had about 10% that could meet the standard. The total cost for particulate is $4 billion. The grand total is $12.2 billion. The revised rules are still very costly at 4 times the cost of the 2004 rule that was vacated.

John C. deRuyter, pointed out that some additional information was provided to EPA relative to stoker coal fired boilers at various meetings over the summer. At one of the DuPont plants, CEMS data was taken for a 30 day test. Various plots were made of the CO data against several parmeters, including oxygen, heat input, and various hydrocarbons. Coal data was available for the entire year.

There was less volatility in the coal data during the 30 day test than over the entire year. There was no correlation of hydrocarbon emissions with CO below the level of 100 ppm. There was no correlation of CO with oxygen below the CO level of 100 ppm. It was noted that the coal data had 39% volatile matter with a variation of +/-1%. The value of 1% represents 1000 ppm of VOC. The value of 1 or 2 ppm of hydrocarbons is well within the variation of 1000 ppm. Further, the data shows the oxygen level of 8.5%. That level provides a generally high level of oxygen everywhere in the furnace. Once the CO is reduced below 100 ppm, the bulk mixing issue is no longer dominating the combustion process in terms of CO formation and unburned hydrocarbons. Under these conditions, the volatile release location (particularly for a stoker) becomes important. The volatile is released close to the wall where the temperature is considerably lower, the combustion process will not take place. That will be the primary source of the average of 1 ppm of hydrocarbon that results. Therefore, CO would not be a good correlation for unburned hydrocarbons when the CO is below 100 ppm.

EPA is keeping all 4 rules together and will not separate them. The final rules have been at OMB since mid-May. No action letters have been issued by EPA. EPA has been considering a NODA for late September or early October. Much of the final rule has been positioned for litigation purposes. Most likely the final rules will come out in late November or early December. Compliance dates will likely be extended.

DOE issued a guidance document for calculating emission credits that might come about as a result of implementing energy conservation measures. Emissions averaging based on maximum rated heat input and most recent compliance tests can be utilized along with monthly results for up to 12 months. Thereafter, an annual emission averaging can be used. The emission rate can be modified by the emissions credits. This has the impact of calculating a reduced rate of emissions. There are 7 opportunities for savings discussed in the methodology. More information is available on the DOE website.

RCRA Ash - **Gary Merritt**, Inter Power/AhlCon Partners L.P.

The proposed amendment to the transportation bill did not make it through the Conference Committee. Compromise language was prepared in the Senate. There was communication with the House. The Senate version is a Sub Title D approach. State administration and enforcement of the rules is included. The Congress is still looking for a vehicle to move the bill. The EPA has a proposed rule in preparation. In short, the situation is still up in the air.

Boiler MACT Litigation Update - **Lisa Jaeger**, Bracewell & Guiliani L.L.P.

The litigation update slides are on the CIBO website. On the ozone NAAQS, oral argument is scheduled for November 16th. There might be a decision early next year. A new proposed standard is scheduled for 2013. The issue is whether the revised rule was supported by the science.

The MATS case contains the usual arguments. The key issue is to attack the "appropriate and necessary" finding. Briefing is scheduled from October to April. Oral argument is projected for June of 2013. The sub cases (baby MATS) include new unit developers, NSPS issues, EPA denial of De-listing petition, testing/averaging/notifications/reporting/etc., and the Chesapeake Climate Action. These would all be separated from the main case for "expedited action". Only the first one is proceeding at this time.

The proposed GHG Utility NSPS has already been challenged by a number petitioners that have plants under construction. The court has allowed expedited briefing. EPA then asked for more time. EPA asked for a motion to dismiss. The petitioners asked for a decision to proceed. Motions were filed on Sept. 6th.

The Coal Ash RCRA Mandatory Duty suit claims that EPA violated mandatory duty to review and revise as necessary all of its rules every 3 years. The environmental group wants the court to declare a violation and order EPA to review its regulations and, in fact, revise the 3 particular rules that exempt CCR from hazardous waste. An industry group asked the court to declare a violation and order EPA to determine whether to revise the regulations for disposal under C or D or not at all. There are motions for summary judgment pending. The EPA response is due Sept. 28th.

The PC MACT litigation is currently in abeyance. EPA agreed to take the rule under reconsideration. Comments have been submitted.

The Boiler MACT, Rice MACT and PM2.5 cases are currently in abeyance.

The GHG cases have had some decisions. The timing and tailoring petitions were dismissed for lack of standing. All other petitions were denied. Petitions for rehearing "en banc" in August. The court called for responses by Sept. 21st. The "en banc" process requests the entire court (all 9 judges as opposed to a panel of 3). The goal is to get a chance for a dissent. The petitioners then can take the dissent arguments and potentially go to the Supreme Court.

The NO2 and SO2 NAAQS cases came out 3 days apart. In both cases, the Court upheld both standards. However, the court stated that it had no jurisdiction to review the Preamble requirement for modeling data for compliance.

The CSAPR rule was vacated. This rule was supposed to replace the CAIR rule, which was originally vacated but later re-instated so that some rule would be in place. The substantive problem was that EPA went beyond what was supposed to be the contribution from an upwind state. EPA did not calculate and show what the contribution from the upwind states and set up requirements. Likewise, EPA did not issue a SIP call, but instead issued a FIP with the declared contributions. Cutting out the states was a clear violation.

There are 6 other cases that could be impacted by this decision. The lone dissent was that the petitioners did not bring this up during the rule preparation and thus EPA did not consider it. Also,

there were other cases that were under consideration and the court should have no jurisdiction on the issue of the FIP vs. SIP. The likelihood is that EPA will ask for a rehearing "en banc".

Preview of Annual Survey - **Bob Corbin**, CIBO Member Services Consulatnt

Bob noted that we have received 40 surveys so far. If you haven't filled out your survey, please do so. A full report will be delivered at the Annual Meeting. The preliminary results are also on the website. The environmental top 5 are the same as last year. On energy, natural gas supply moved into the top spot. Energy efficiency moved up as well. Suggestions included expanding the scope of the fluid bed conference to include stokers, more case studies at the IEC, and compliance strategies for Boiler MACT.

RICE MACT **– Robin Mills Ridgway**, Purdue University

This rule is exceptionally complicated. There is a MACT/GACT for internal combustion engines as well as New Source Performance Standards. There are two types of engines: essentially gasoline engines and diesel engines. The MACT/GACT rules (40 CFR 62 Subpart ZZZZ) cover engines at major source MACT facilities and at Area source facilities for HAPs. These rules apply to stationary engines as opposed to non-road engines. A portable, non-road engine is considered to be stationary if it stays in the same place more than 12 months. Existing emergency engines at institutional, commercial, and educational facilities are exempt. Sources are also divided into greater than 500 horsepower and less than or equal to 500 horsepower. There are also regulations for new and existing units. There are different dates for different engines. Engines over 500 HP at Major Sources are new/reconstructed if construction commenced on or after December 19,2002. Smaller engines at major sources and all size engines at area sources are new if they were constructed or reconstructed after June 12, 2006. Existing engines smaller than 100 HP and emergency engines are subject to work practice standards. The size classifications are different for existing and new units.

The NSPS (40 CFR 60 Subpart IIII) apply to new or modified compression ignition engines. Engines are new if they were constructed, modified or reconstructed after July 11, 2005. For emergency service there are no limits on the hours of operation for emergency operation, but there are limits on maintenance and readiness checks operations. Some units are allowed 50 hours/yr for non-emergency operation. The engine cannot be used for peak shaving or as part of financial arrangement with another entity, except that 15 hours out of the 50 hours can be used for demand response in emergency situations. Compliance requirements include purchasing engines certified to meet NSPS standards and operating the engines according to manufacturer's specifications. In addition some units are subject to initial emissions performance testing, subsequent testing on an operating hours basis, oil/filter changes, maintenance checks, notifications, and semi-annual compliance reports. Some units have to monitor and record fuel usage. For those units that have limits, CO and formaldehyde are the two compounds with numerical limits. The compliance dates for new engines is on start up, modification or reconstruction..

The NSPS for spark ignition engines is found at 40 CFR 60 Subpart JJJJ and applies to units that were installed, modified or reconstructed on or after June 12, 2006. Again, the type and size of engine are important and owners need to check to make sure they know which part of the rule applies.

Your unit has been reconstructed if changes to the unit cost more than 50% of the replacement cost of the engine. Your unit has been modified if emissions of a NSPS pollutant increased on a lb/hr basis. The emission limits are based on output standards. The emissions of NOx, CO, PM, and non-methane hydrocarbons have limits. There are 4 tiers of engines. Sulfur is handled by fuel standards. Fire pump engines have different certification years. For manufacturer certified engines, the owner must install, operate, maintain, and store the engine in accordance with the manufacturer's recommendation. Otherwise, the owner becomes responsible for performance testing.

Spark ignition engines include gasoline, natural gas, and other gaseous fuels (propane). The sizes and dates for these engines are all different. There is an NSPS definition of emergency for these engines that is different from the diesel engines.

Purdue University is classified as a major source of HAPs. At the 2,600 acre site, there are 381 buildings, with 64 emergency generators, one air compressor engine, and one small generator of 1.8 Mw. It is important to locate and classify every generator. The job or role of each generator needs to be classified and verified. Emergency is defined if the power goes out, but not if the price is too high or for peak shaving. The install date is considered to be when the unit is "accepted" and ownership has been turned over to the university.

A spread sheet is a good tool for documenting all of the particulars for each engine. If this rule is confusing to EPA and the owners, it will be doubly confusing to state agencies. State inspectors will be looking for such a spread sheet or similar document at your site. There are 8 tables in the rules. The major source rules and the area source rules are in the same document. Again, the size of the generator dictates many of the requirements. For simplicity, Purdue is using the 100 hour limit for non-emergency operation for all of its engines, even those that are exempt. EPA's web site for RICE is http://www.epa.gov/tn/ate/rice/ricepg.html .

NAAQS Update - **Maxine D. Dewbury**, The Procter & Gamble Company

There are numerous NAAQS milestones underway and states are generating SIPs in order to come into attainment for those NAAQS. Ozone has been the major issue. EPA pushed the issue to 2013 and retained the Bush Administration level of 80 ppb. The proposed new standard is for 60 - 70 ppb. At 60 ppb, most of the country would be in non-attainment. There are new standards for SO2 and NOx. There were no non-attainment areas for SO2 for over 30 years. There was only one non-attainment area for NOx.

The new standards are considerably more stringent. There is still the issue of modeling vs. monitoring. For the first round, EPA has stated that monitor data would be used, but more monitors would be needed. EPA proposed that monitors should be added near major highways. The proposed standard for PM2.5 was reduced and a visibility standard was added. It was noted that the larger sites might be able to justify the installation of monitors at their fence lines because the model results are extremely conservative. The actual monitor data can be used to show that the model results are high.

GHG Regulatory Developments - **Maxine D. Dewbury**, The Procter & Gamble Company

The EPA maintained the threshold for GHGs at the current level. A study team has been set up to review the policies and suggest changes to streamline GHG permit procedures. Issues include "major for one, major for all", GHG only for PSD permits, and Title V permits. Streamlining options include potential to emit restrictions, permits by rule, general permits, presumptive BACT, standards for suppliers (i.e. certification), expedited SIP approvals, and expedited permit reviews. There are 4 subgroups to look at different aspects of the streamlining issue.

Utility MATS/CSAPR/CAIR Update - **Jay Weist**, Worley Parsons Group

CSAPR was vacated by the court. In particular, the methodology of CSAPR was thrown out. The likelihood of that approach returning, regardless of the appeal process, is slim. The history of the environmental regulations goes back to 1955. The NAAQS is the starting point. Thus, it is important to take part in the debate on the NAAQS setting as that drives the requirements from all of the other sections of the Clean Air Act. The MATS rule was upheld by the court and is in effect. The particulate matter limit is 0.030 lb/MMBTU or 0.3 lb/Mwhr. SO2 standard is 1.5 lb/Mwhr. The mercury standard is 4 lb/trillion BTU. The chloride limit is 0.002 lb/MMBTU or 0.02 lb/Mwhr. Work practice standards were given for CO and for dioxin/furans. The particulate standard is for filterable particulates. There are also standards for new units, but there are only a few units that started construction after the rule was proposed.

There is a partial stay of the effectiveness of the final rule for new units at the moment. The revisions were supposed to be issued last week. Title I of the Clean Air Act includes New Source Review, which contains the prevention of significant determination (PSD) provisions. In a non-attainment area, Lowest Achievable Emission Rates (LAER) applies. LAER is not MACT.

The Clean Air Interstate Rule (CAIR) was to address ozone and particulates in the Eastern part of the country (ie a non-attainment issue). CAIR was subsequently vacated, stayed, and remanded. This rule is still in place because the CSAPR rule was vacated. CSAPR was the replacement rule (originally the Clean Air Transport Rule) for CAIR. Under CAIR the annual caps for SO2, NOx, and particulates are set to be lowered in 2015. The CAIR rule allocates NOx and SO2 budgets for each state. The CAIR rule allows the states to determine how to achieve the reductions to meet the state budget. The trading system under CAIR has been re-instated.

The Clean Air Visibility Rule (CAVR) is still in effect. This rule requires visibility improvements to reach back ground levels by 2064. Best Available Retrofit Technology (BART) is required for specified units. CAIR controls were allowed to substitute for BART controls. This was changed to CSAPR and, so far, has not been changed back to CAIR.

Government Affairs - **Karen Neale**, Hummingbird Strategies LLC

In addition to the presidential election, there is the full House elections and roughly 1/3 of the Senate elections. Although Congress came back in session this week, they are expected to leave to campaign by the end of the month. There will be no substantive legislative passage before the election. There will be continuing resolutions to keep the government running, most likely to March 2013. Hearings will be held to lay the groundwork for future bills. The Senate Energy Committee is already evolving as the Chairman (Sen. Bingaman) is retiring and Sen. Wyden is expected to Chair with Sen. Murkowski as the ranking member. There is also the Science and Commerce committee,

which has the ranking member retiring. The Environment and Public Health Committee will still have Senator Boxer and Senator Inhofe as neither is up for re-election. Legislation that was introduced included bills for RCRA Coal Ash, Boiler MACT, Energy Efficiency, and a Clean Energy Standard. During the past year, the White House has issued an executive order promoting cogeneration, as well as positions on vehicle fuel economy, opposition to the Keystone XL pipeline, and participation in the UN Framework talks.

Next Technical Focus Group/Environmental & Energy Committee Meetings
TUESDAY & WEDNESDAY, December 4-5, 2012
Radisson Hotel Reagan National Airport
2020 Jefferson Davis Highway
Arlington, Virginia 22202
Ph: 703-920-8600 ~~~Fax: 703-920-4033