



Appalachian
Region

Timely, Informed Technology Decisions

Newsletter

Spring-Summer 2005

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FROM THE DIRECTOR'S DESK

It was quite a start to July here at WVU. On Monday, President Bush celebrated the 4th with an address in Woodburn Circle on the Downtown Campus, and three days later Energy Secretary Samuel Bodman visited the NRCCE up here on the Evansdale Campus. Secretary Bodman was on a tour of DOE national labs, but he stopped by our building to review several of our carbon related projects, announce that more money is being awarded to DOE's University Coal Research Program - which in this area means WVU, Pitt and Carnegie Mellon - and offer a few comments on the Energy Bill. Following his remarks, Secretary Bodman visited the PTTC Regional Resource Center where he was interviewed by the Associated Press.

In spite of these rather interesting distractions, we were able to maintain some focus, allowing us to move forward on plans for upcoming workshops and for the Eastern Section AAPG meeting which will follow the Eastern Region SPE meeting here in Morgantown. Hopefully, most of you who read this will have received a flyer for the August 16th workshop on **Well Testing: Theory and Practice**. If not, go immediately to our Calendar page for details. And, while you are there, check out the two September workshops that will be offered. The first, a two-day short course on **Well Log Analysis**, is a cooperative venture with national AAPG who agreed to offer their highly acclaimed short course in Morgantown for a drastically-reduced fee of only \$100. AAPG agreed

to do so only because the workshop will immediately precede the Eastern Section meeting. However, because it also immediately follows the ER-SPE meeting, it will be convenient for petroleum engineers to take the course as well. Remember, however, that this course is offered by AAPG, so anyone interested in taking it must register directly with AAPG, not with PTTC. It is not necessary for you to attend either the ER-SPE or the ES-AAPG meeting to take this course. But, since you're in town anyway, why not attend one - or even both.

Following the ES-AAPG meeting, PTTC has arranged for another traditionally more expensive workshop to be offered for a reduced price. Neil Hurley and Matt Pranter will teach **Rocks to Models: an Introduction to 3-D Reservoir Characterization and Modeling** on Wednesday, September 21. A registration form will be provided in the ES-AAPG announcement booklet and on this website. This workshop was offered at the Rocky Mountain Section AAPG meeting last September and was very well received, so please take advantage of this opportunity.

Since I wrote last, we reached two milestones. At the end of April we celebrated our **10th anniversary** as a Regional Lead Organization for PTTC, and prior to the June 1 workshop in Lexington, KY we registered the **5000th person** to attend a PTTC workshop. Later in the year, September 21st to be specific, we will host our **100th PTTC workshop**. Three major milestones in what has to be recognized as a very successful technology transfer effort, milestones which would not have been achieved without DOE funding or without the support of people like you.

Having mentioned DOE funding, no, the Secretary did not leave any money with me when he used our Resource Center for his interviews. But, both houses of Congress have recommended the restoration of some funds for DOE's oil and gas programs, from which PTTC is funded. The restored amounts, although substantially above the administration's recommendations, are still below last year's levels, so we still have some work to do. However, at this time, things look much better than they did a few months ago. To all of you out there who took the time to write your Congressmen or Senators, thank you.

Finally, I would like to call your attention to two special events that will occur in September that will give us the opportunity to honor two geologists who have contributed much to our knowledge of the geology of the Appalachian basin, carbonate and sandstone reservoirs in the basin and elsewhere, for that matter, and to the science of geology in general. The **Friedman Geosciences Conference** will be held in early September to honor Gerry Friedman, a former AAPG Sidney Powers Awardee, and later in the month, following the ES-AAPG meeting in Morgantown, **John Dennison** will lead perhaps his last field trip to look at surface equivalents of Devonian reservoirs in West Virginia and Virginia. I hope that friends and former students of these two fine geologists and educators will take advantage of the opportunities to give back to these two who have given so much.

Douglas Patchen

RLO Director

Programs Set for AAPG-SPE Eastern Meetings

Technical Program Chairs for the ER-SPE and ES-AAPG meetings have put the finishing touches on their programs and are preparing to print and distribute their conference preview and announcement booklets. Both events will be at the Radisson Hotel in Morgantown.

The SPE meeting will begin on Wednesday, September 15 with four workshops: well log interpretation for the Appalachian basin; drilling and completions of natural gas wells; cementing today in the Appalachian basin; and fracturing theory and recent advances in stimulation technology. Technical sessions will be held on

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Thursday and Friday, beginning with two concurrent, six-paper sessions on **Stimulation and Field Development** Thursday morning, followed by two additional six-paper sessions on **Stimulation Case Studies** and **Production** in the afternoon. Concurrent sessions will continue Friday morning, the choice being between **Coal Bed Methane** and **Reservoir Management** sessions. The AAPG meeting will begin with a well log analysis workshop on Saturday and Sunday, September 17-18. However, this course is open to everyone and no one who takes it needs to register for either meeting, SPE or AAPG. Concurrent technical sessions will be held on Monday and Tuesday, beginning with a special session on Monday morning where national **AAPG officers** will present seven technical papers. The concurrent session will consist of 7 of 10 scheduled papers on **Carbon sequestration**. The additional three papers will be presented in the afternoon, followed by three papers in the first of several **Petroleum Geology** sessions. The concurrent session in the afternoon will be on **Reservoir Management and Technology**.

Tuesday morning, registrants will choose between a full seven-paper session on **Petroleum Systems of the Appalachian Basin** or four talks on

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Environmental Geology followed by two talks on Petroleum Geology in the other session. In the afternoon, two additional Petroleum System papers will be given, followed by four talks on **coal bed methane**. The concurrent session will consist of six talks on Petroleum Geology. The meeting will conclude with the **Rocks to Models workshop** on Wednesday.

For those of you who prefer to learn your geology in the field, two field trips will be offered. Thomas C. Wynn (Lock Haven University), Aus Al-Tawil (Saudi Aramco) and Fred Read (Virginia Tech) will lead a two-day field trip to examine the **Sequence Stratigraphic Framework of Big Lime Reservoirs** in West Virginia. The trip will leave Morgantown on the afternoon of the 16th and return in time for the opening session and awards ceremony on the 18th. Following the meeting, Dr. John M. Dennison will lead what may well be his last Appalachian field trip to examine **Devonian Hydrocarbon Stratigraphy** near U.S. Route 250 in Virginia and West Virginia. This will be a special opportunity for friends and former students of Dr. Dennison to forage into the field with him one final time.

Friedman Geosciences Conference Scheduled

The Northeastern Science Foundation has announced that they will host a special conference to honor Dr. Gerald M. Friedman on the occasion of his retirement from a long and distinguished career in geology, education and government service. The conference will be held from September 11-13 at the Northeastern Science Foundation location in Troy, NY. In keeping with Gerry's life-long quest to answer the most difficult and more interesting questions related to all aspects of geology, this meeting will be devoted to debating questions concerning recent developments in the geoscience disciplines, most importantly those involving interaction among colleagues. Papers will be presented on all aspects of geology and environmental science, and will combine theme-

oriented, invited papers with volunteered papers. All accepted abstracts will be published in a special symposium volume of *Northeastern Geology and Environmental Sciences*.

Registration has already begun. To register, send a check for \$60 made out to the Friedman Geoscience Conference to Northeastern Science Foundation, P.O. Box 746, Troy, NY 12065. For students, the registration fee is \$30.

A block of rooms has been reserved at the Bet Western Rensselaer Inn, 1800 6th Avenue, Troy, NY 12180; phone 518-274-3210 before August 10 and mention code NESF meeting for a special rate of \$60 for a single or \$75 for a double. A full breakfast will be provided by the hotel.

Geological CO₂ Sequestration Task Force Issues Final Report

The Interstate Oil and Gas Compact Commission (IOGCC) CO₂ Geological Sequestration Task Force released their final report on “A Regulatory Framework for Carbon Capture and Geological Storage” in early March, accompanied by a summary report issued by IOGCC entitled “Carbon Capture and Storage: A Regulatory Framework for States - Summary of Recommendations.” The creation of this task force was prompted by the prospect of global climate change due to an increase in the amount of carbon dioxide in the earth’s atmosphere and the promising option of capturing carbon dioxide emissions and storing the CO₂ in subsurface geologic formations.

In creating this task force, IOGCC recognized that the jurisdiction, experience and expertise of states and provinces in regulating oil and natural gas production and natural gas storage in the United States and Canada would allow the states and provinces to play a critical role in the regulation of carbon capture and geological storage (CCGS). The role of the task force was to examine the technical, policy and regulatory issues related to safe and effective storage of CO₂ in the subsurface. Depleted oil and gas reservoirs, coal beds and saline formations were identified as primary targets for CCGS.

The final report contains an assessment of the current regulatory framework that is applicable to CCGS, and recommended regulatory guidelines and guidance documents for states and provinces. The work of the task force was guided by four

analogues, which in the opinion of the task force provide a technical and regulatory basis for CCGS. These four analogues are: naturally occurring CO₂ in geological reservoirs, including natural gas reservoirs; the large number of industry projects where CO₂ has been injected into reservoirs for enhanced oil recovery (EOR); storage of natural gas in geologic reservoirs; and injection of acid gas, a mixture of hydrogen sulfide and carbon dioxide, into underground formations, with its long history of safe operation.

In the report, the task force divided the process of CCGS into four components: capture, transportation, injection and post-injection storage. A complete regulatory scheme will require an assessment of each of the four technical issues and a review of the existing regulations. The task force concluded that most states and provinces already have regulatory frameworks that cover all of these issues except long-term storage.

The task force recognized that CO₂ is a commodity, not a pollutant, waste or hazardous substance. The task force recommended that CO₂ injection for EOR purposes continue under existing state and province regulations. As far as injection of CO₂ for non-EOR projects, the task force “strongly believes that inclusion of non-EOR CCGS wells under Class I or Class V of the UIC program would not be appropriate or conducive to the growth of CCGS as a viable option in mitigating the potential impacts of CO₂ emissions on the global climate.”

Basic Carbonate Geology: A One-Day Course for Geologists and Engineers

More than 70 petroleum geologists and engineers braved a late winter snow storm, icy roads and traffic delays due to an accident on I-79 to attend a March 8, 2005 PTTC workshop in Washington, PA. “Basic carbonate geology: a one-day course for geologists and engineers” was developed and taught by Dr. Langhorn “Taury”

Smith, a recognized carbonate expert who manages the Reservoir Evaluation group within the New York State Museum Institute in Albany, NY, and Dr. Fred Read, another carbonate expert and long-time member of the Department of Geosciences at Virginia Polytechnic Institute and State University in Blacksburg, VA.

The attendance at the workshop (73), possibly increased by the nearly unquenchable thirst for information concerning the Trenton and Black River carbonates in the Appalachian basin, was well above average (51) for a PTTC workshop in this region. The attendees represented a good mix of repeat customers (59%) and new converts; both groups apparently got their money's worth and enjoyed the workshop and interaction with other attendees.

The course outline consisted of lectures on six topics, plus three breaks for informal discussion and core examination. In addition to cores from New York, Dr. Bill Harrison (Western Michigan University) provided Trenton-Black River cores from Michigan reservoirs.

Dr. Read led off with a summary of the types of grains found in carbonate rocks, which led into a second section on recognizing skeletal grain types, and then to a summary of carbonate rock types, a classification scheme and the geometry of carbonate buildups (reefs and banks; mounds and sheets). Dr. Read then presented a well-illustrated discussion of carbonate depositional settings, beginning with interior platform facies, like the Cambrian carbonates in the Appalachian basin, followed by a variety of shoal environments, including carbonate ramps (like the Trenton-Black River), ooid shoals, carbonate banks and reefs. He concluded this section of the program with a summary of deep ramp and slope settings, and then presented a series of slides that summarized the sequence stratigraphy of carbonate platforms

During the afternoon session, Dr. Smith concentrated on carbonate reservoirs, beginning with a section on basic diagenetic models for dolomitization and cementation, followed by a section on carbonate porosity types and integrated reservoir characterization. The bottom line for the

first section was that some processes, like leaching, some dolomitization, minor cementation, fracturing and brecciation, can enhance reservoir quality. However, other diagenetic processes, like compaction, pressure solution, cementation and "over-dolomitization" can degrade reservoir quality.

The second section, on pore types and reservoir characterization, included examples from the Beekmantown (Little Falls Dolomite), Trenton-Black River and Onondaga Limestone reef plays. Dr. Smith concluded that reservoirs in the Little Falls Dolomite have good intercrystalline porosity in laterally extensive peloidal grainstones, but four-way closure, similar to examples in Ohio, are probably necessary to be commercial. Reefs in the Onondaga Limestone are isolated buildups with lateral shale seals. Later diagenesis, perhaps related to faulting, appears to have enhanced porosity. Pore types include leached inter-particle, intra-skeletal, vugs and fractures. Fractures are important, probably necessary, for high gas flow rates.

The Trenton-Black River play is a fault-related, hydrothermal dolomite play, at least in New York. Matrix porosity appears to be less than in reservoirs in Ontario and Ohio. Some vugs are not connected, but intersecting fractures and faults can tap into gas storage areas in vugs, breccias and other fractures. The bottom line is that operators must intersect faulted and fractured zones to get the best wells, which is an argument for drilling horizontal wells.

The course was designed to give participants a basic knowledge of carbonates, but not a lot of detail. The final lesson of the day was that there are many tools in the carbonate geology toolbox that can help one understand carbonate reservoirs and make better decisions that will improve the bottom line. Like dealing with any type of reservoir, you must know your rocks!

The Trenton-Black River Play is Exciting, But Don't forget the Sandstones!

(Text contributed by Lance Cole, PTTC Project Manager)

The Upper Devonian has been a prolific producer in the Appalachian Basin. Despite its maturity, it is still being actively drilled – 88% of Pennsylvania drilling activity (2004) and 32% of

West Virginia drilling activity (2000). Dan Billman, a regional geologic consultant, notes that areas in which to look in Pennsylvania include: deeper, off the edges of anticlines, eastward, to look for gas in

the oil play; or in “white” areas on the State’s oil and gas map, areas with large undrilled tracts (but one must learn the reason they’ve not been drilled). One should note that geology can take a back seat to issues such as lease position, pipeline-ology, and road-ology. Billman recommends going beyond sand thickness mapping to “sand with porosity (8% cutoff)” mapping. He’s also found bubble maps of cumulative/estimated ultimate recovery quite helpful.

In the Appalachian basin it’s not just exploration; there are great opportunities for optimization projects in existing fields and wells. Consultant Matt Vavro showed how to determine incremental production/reserve gains by producing wells at just a little bit lower bottom hole pressures. One would be surprised at the attractiveness of the economics. Leo Schrider, FOFM, Inc., presented data showing production improvements made possible by fracturing additional zones in the Upper Devonian sandstone section. He noted that operators looking for oil in wells drilled in the 1970s-1980s passed over gassy zones and generally completed only in zones with 8-14 % porosity.

Schrider cited a 28-well recompletion program that targeted gassy zones and lower porosity (6-8%) zones. Production increased in 27 of 28 wells, prompting the effort to be expanded to another 50 wells. Overall, the workover program extended field life by 5+ years and most workovers paid out in less than 12 months. In another realm, data were shared on more recent waterfloods of Upper Devonian sandstone reservoirs that have been successful. Although there are problems to be solved, waterflooding is simpler than EOR and current oil price provides the incentive to give it a serious look.

The “new thang” in the Appalachian Basin has been Trenton-Black River (TBR). Recent PTTC workshops in Kentucky and New York combined, lecture, core examination and field trip. A few slides presented in the New York workshop crystallize things. Here’s how one slide described what industry knows: (1) Prolific reservoirs are hosted in dolomite that occurs around faults visible on seismic data. (2) Similar reservoirs are found in TBR and equivalents in Ontario, MI, OH, PA, KY and TN. (3) Matrix and saddle dolomite are formed in the subsurface from hot, saline brines sourced

from the faults. (4) Faults have some component of strike-slip.

Data overwhelmingly support a hydrothermal dolomite origin for TBR reservoirs. Reservoirs should occur around wrench faults with evidence of movement in the first 500 meters of burial. Faults may be reactivated later in the burial history, but the best fields occur around faults that have had little obvious movement since the Ordovician or Early Silurian time. In a unique experience, the New York workshop included a field trip to a quarry where a hydrothermal dolomite body had been excavated for detailed study. A 3-D ground penetrating radar survey had been run over the feature and six cores had been cut in and adjacent to the dolomite body. Cores were laid out next to the visible core holes, providing a unique visual experience. Cross sections from one side of the feature to the other, based on the cores and the ground penetrating radar, were available.

The Kentucky TBR workshop concentrated on results developed during a three-year project that focused on dolostone outcrops and adjacent shallow cores in central Kentucky. This project was funded by DOE, Triana Energy and the New York State Energy Research Development Administration. Presentations focused on four areas: (1) timing of dolomitization, including relation to structure, hydrocarbon migration and absolute timing; (2) dolomitization effects on porosity, (3) controls on dolomitization, both structural and stratigraphic; and (4) source and pathways for fluids. Preliminary conclusions include: dolomitization occurred in two major events that differ in timing, style, chemistry and porosity effects; dolomite timing differs from Mississippi Valley Type mineralization; more dolomite is not always better for reservoir development; many events happen after dolomitization; and ultimately, porosity is related to the proximity to controlling faults.

Although much has been learned, there’s still more we need to know. Appalachian Region Director Doug Patchen was instrumental in organizing a DOE-funded, industry/survey/academia research consortium to study many of these remaining TBR technical issues. Seventeen gas exploration and production companies purchased memberships in the consortium; more than 20 geologists and

geophysicists in five state geological surveys comprise the research team. Research is being conducted in the areas of structural geology, including basement tectonics; stratigraphy; petrology; rock and gas geochemistry; and an

analysis of production data. Goals are to estimate the gas resource in the play, develop models for the development of reservoirs; develop models for the development of dolomite; and identify fairways in which to focus exploration efforts.

Ten Successful Years for the PTTC: a Look Back

On March 27, 1996 we hosted the first ever PTTC Focused Technology workshop in the Appalachian basin. We chose as a theme, "Access to Electronic Oil & Gas Databases," a choice dictated by the overwhelming response from those who attended our three Problem Identification workshops in 1995. Participants in those three workshops (and at nearly 30 similar workshops in the nine other PTTC regions) identified the lack of access to good data as the biggest technical barrier to be overcome in this basin.

Since that initial workshop we have offered many other workshops dealing with databases, software, the internet and websites; new technology, like 3-D seismic, horizontal drilling and coiled tubing; overcoming production problems; and a variety of other engineering and geologic topics. And along the way, we have had a great deal of success in providing workshops on well safety for field operators, summaries of gas plays in the basin, and updates on new plays, like coal bed methane and Trenton-Black River. In the process, we have learned that we needed to expand our program to reach an audience other than just petroleum geologists and engineers. We discovered this quite early, in the spring of 1997, when we began a cooperative venture with the West Virginia Oil and Gas Division.

I was approached at that time by Ted Streit, former director of the division, who asked me to co-host a series of workshops on "Environmental Compliance." The idea was to teach well tenders in West Virginia what was acceptable and what was not acceptable to be in environmental compliance in the state. Subsequently, we hosted five workshops in a variety of buildings in five relatively small towns in West Virginia. Surprisingly, these workshops were attended by 360 well tenders who were eager to learn how to do their job better and

cheaper while ensuring that their employers remained in compliance.

Unfortunately, we seemed to forget about this potentially large, eager to learn audience, and for the next six years we concentrated on a difference group of people. However, this changed in 2003 when we began holding discussions with Matt Vavro about hosting workshops on "Well Safety for Well Tenders." We learned very quickly that the audience was still there for these so-called "Pumper" workshops. At Matt's first workshop, April 22 in Pikeville, KY, 100 well tenders participated in a day filled with lectures and hands-on demonstrations at a series of stations he had set up. Two days later, in Buckhannon, WV, 109 well tenders convinced us that we needed to expand the program even more. Consequently, in late August of that year we hosted 118 well tenders in Bremen, OH and two days later, in Indiana, PA, we had to turn away more than 100 hopeful registrants. However, rather than turn them away totally, Matt stayed an extra day, and thus, in those two days, 258 Pennsylvania well tenders were exposed to his unique brand of teaching well safety.

The following year, 2004, PTTC's National Project Manager, Lance Cole, and other PTTC regions began to take notice of our success and became interested in learning more about our workshop model. Eventually, the Midwest Region hosted a workshop and other regions have expressed interest in doing so as well. Meanwhile, back in our region, Matt taught additional workshops in Meadville, PA and Marietta, OH, and may return to Ohio again this fall.

So, what began in West Virginia more than 8 years ago has expanded to other states in the region and to other regions as well, proving that there are many types of workers in the oil

and gas industry who need and desire training and exposure to different or new techniques and technology. We at PTTC need to remember to expand our view of the industry and not neglect anyone with an interest in learning.

At the other end of the technology scale, we really started something in the fall of 1999 when we hosted workshops in Akron, OH and Morgantown, WV. First, the Ohio Geological Survey and Ohio Geological Society co-hosted a workshop called "Into the New Millennium: the Changing Face of Exploration in the Knox Play." We already knew that play-based workshops drew large audiences, but we really weren't prepared for nearly 100 registrants with an interest in this deep play in Ohio. Nor were we ready for the more than 100 participants in a workshop a month later, on Veteran's Day in fact, who gathered in Morgantown to learn about "The Challenge of Drilling in the Trenton-Black River Group."

The Veteran's Day workshop was the first of nine Trenton-Black River Play workshops that we developed and hosted during the next six years. We learned slowly - we didn't host the second one until May 1, 2001 - but the 165 registrants who crowded into the Assembly Room at the NRCCE building that day, plus the 50 that we turned away, convinced us to continue with this line of success. So, in August 2001, we repeated the May 1 workshop for those 50 who were turned away, and they returned, bringing another 70 with them. That August workshop began with a core workshop that

attracted 48, and was followed by a full day of talks the next day that drew 119.

Trenton-Black River "workshop fever" reached a peak in April 2003 when 176 registrants gathered in Canton, OH to learn more about the play from those who actually were involved in locating, drilling and producing the wells. However, by June 2004, as the number of active participants in the play continued to decrease, interest in Trenton-Black River workshops finally began to wane. "Only" 53 registrants - approximately our average for nearly 100 workshops in the program - came to Morgantown for a workshop on "Understanding the Trenton-Black River Reservoir." Since that workshop, we have taken a different approach by hosting several workshops that incorporated lectures with core examination and short field trips to observe outcrops that appear to be models for subsurface reservoirs.

These nine Trenton-Black River workshops have drawn approximately 800 registrants, and even though the total number of registrants for recent workshops has decreased, those who attend still travel from throughout the basin and across the U.S. and Canada to participate. And, it all began with a workshop on the Knox play, when nearly 100 people attended, many of whom had an interest in what was going on in that fractured and dolomitized carbonate section well above the Knox unconformity.

Next time, a look back at coal bed methane and sandstone plays, plus fractured reservoirs.

PTTC Honors Miller and Schrider

One of our initiatives in recognition of our 10th anniversary was to set up an awards program to honor those who have contributed to our success. One of the awards that we created is the Past Chairman's Award that recognizes those individuals who have given unselfishly of their time and efforts, not only at the regional level working with our Producer Advisory Group (PAG), but at the national level as members of the Board of Directors, as well.

Our most recent PAG Chairman, Bernie Miller, was recognized during a dinner meeting of the national Board of Directors in Washington, DC

in March. Bernie's Past Chairman Award citation reads: "Presented to Bernie Miller in recognition of his unselfish commitment to furthering the goals of the Appalachian Region PTTC and in appreciation of his strong and effective leadership of the Producer Advisory Group, 2002-2004."

Two months later, at the beginning of the workshop on Upper Devonian Sandstone Plays, we surprised Leo Schrider, just as he was beginning his welcoming remarks, by presenting him with his award. His citation reads: "Presented to Leo Schrider in recognition of his highly successful,

pioneering efforts to develop strong industry support for the PTTC program as the first Chairman of the Appalachian Producer Advisory Group, 1995-1998.”

Once again, our congratulations to Leo and Bernie, and our thanks to them and to all of you who have helped make this program a success during the past 10 years.

Stripper Well Consortium - “Year of Communication”

The Stripper Well Consortium (SWC) has designated FY05 as their “Year of Communication.” To emphasize this new commitment to outreach, they are in the process of producing an educational documentary video - tentatively titled “Independent Oil: Rediscovering America’s Forgotten Wells” - that focuses on the strategic importance of the nation’s stripper oil and gas wells that are operated by independent producers, and the very real potential that these resources may be pre-maturely abandoned unless they receive a boost from new technology. The video should be completed by late summer 2005 and will be aired, initially on the Penn State Public Broadcast network, and also on other public television stations around the nation.

The SWC also has released a 32-page booklet - “Keeping the Home Wells Flowing” - with a subtitle of “Helping Small Independent Oil and Gas Producers Develop New Technology

Solutions.” The booklet begins with a summary of the U.S. energy supply challenge and then documents the role of stripper wells in meeting the challenge. Sections follow on how the SWC works, and on successful SWC case histories. The final two sections, both brief one-page essays, deal with training the next generation of oil and gas technologists and getting the message out: keeping stripper wells on production.

If you are interested in receiving a copy of this publication, we have a few at the PTTC Resource Center and can obtain additional copies from the SWC.

The SWC will hold meetings in Warren, PA on October 18 and in Midland, TX on October 27. Under a new arrangement, a non-member can pay their own way to a meeting by paying a registration fee. Members do not pay separate registration fees to any SWC meetings.

Previews of Coming Attractions

This summer your PTTC team at the Resource Center embarked on a new project, called “Core Locator.” This is part of a nationwide effort kicked off by Sandra Mark, the Rockies RLO Director, to compile a GIS of the locations of all cores in the US that are available for study in public core repositories. To assist her, and you, with the help of the geological surveys in five states we compiled spreadsheets of data for all wells for which cores are held in Appalachian basin warehouses. Virginia recently offered data as well, so once these data are received, we will add this

layer to our existing layers (Trenton, coal bed methane and horizontal wells), hopefully during the current calendar quarter.

Other currently on-going or planned data-related projects that will end up on our website include a compilation of drilling, production and reserve data by year and by state for the basin; an effort to scan all Program and Abstracts volumes for every Eastern Section AAPG meeting; and the development of “commodity” pages for our website. The commodities that we have in mind

right now are coal bed methane and gas from Devonian shales. For each of these, we will prepare brief summary papers, links to other papers and

data, and tables of data to help those of you who want a quick look at these plays.

Odds and Ends

Before I forget, one of our original PAG members, and one of the most knowledgeable gentleman geologists in the Appalachian basin, **Art Van Tyne**, will celebrate his 80th birthday early in August. If I'm not too confused, I think the big day is August 12. Anyway, a heads up to those of you who might want to send a card, note or check to Art to wish him well and thank him for all that he has done for PTTC, AAPG and the oil and gas industry in New York and the Appalachian basin for the past 50 years.

When I was in San Jose attending the Pacific Section AAPG meeting, I had the opportunity to listen to a Division of Professional Affairs luncheon address by George Taylor, State Climatologist of Oregon, on "A Climatologist Looks at a Long-term Perspective on Climate Trends." He got my attention right away when he stated that even if all nations meet the goals of the Kyoto agreement, the average global temperature would be decreased by only 0.05 degrees C. If the United States does not participate, the average temperature reduction would be 0.02 degrees C. His conclusion was that either way, whether the US participated or not, we wouldn't notice the temperature reduction on a global scale.

Mr. Taylor presented data and graphs of historical trends in surface temperature, rainfall, snow pack depth and sea level for Oregon and the northwest in general. His data for surface temperatures from 1880 up to 2000 indicated a gradual rise of one degree a year since the 1970s, but the warmest decade on the graph was the 1930s. These data did not track well with a graph of global temperature, which indicated a gradual rise from 1880 to the 1970s, and a steeper increase after that. He attempted to explain some of the differences as

being due to the "urban heat island effect," which means that the average temperature in cities is increasing at a greater rate than the average temperature in rural areas due to the difference in land use.

When rainfall and temperature data are combined, several interesting observations can be made. From 1896 to 1916, the northwest was cool and wet; from 1916 to 1946, warm and dry; from 1946-1976, cool and wet; and from 1976 to 2000, warm and dry. He explained this as being a function of "Pacific Decadal Oscillations," or PDO. When Taylor moved on to snow pack data, he did indicate that snow pack depth has decreased, in at least one reporting station, by 40% since 1950. But, if one adds older data and redraws the curve, the best fit would not be a single straight line, but a series of four plateaus separated by steep increases or decreases that fits the curve for the Pacific Decadal Oscillations.

Taylor warned the students in attendance not to take his word, or the word of others in the field of global climate change, before first doing the research themselves. He emphasized that there is a need for those scientists who are concerned with global warming, but who also are concerned with scientific integrity, to become involved in this field of research. He concluded that his own research, in the northwest, leads him to believe that the present state of climate change reflects primarily natural causes, and predicted that future changes will be modest during the 21st century. He ended with a personal note, that in the continuing debate between climatologists and climate modelers, the media has made this a political issue and is clearly on the side of the modelers.

Photo Gallery



Figure 1: PTTC Workshop – June 1, 2005 – Lexington, KY



Figure 2: PTTC Workshop – June 7, 2005 – Albany, NY



Figure 3: PTTC Workshop – June 7, 2005 – Albany, NY



Figure 4: PTTC Workshop – June 7, 2005 – Albany, NY



Figure 5: PTTC Workshop – June 7, 2005 – Albany, NY – Doug’s in charge!



Figure 6: WV Secretary of Commerce, Tom Bulla (up front, right) is led by Ron McDowell, Lee Avary (WVGES) and retired Pendleton County school teacher, Paula Waggy, (right to left in order) on a field trip near Canaan Valley to collect plant fossils.