

0013

*General*

**From:** Priscilla Burton  
**To:** OGMCOAL  
**Date:** 5/21/2008 4:59 PM  
**Subject:** O:General\2008\Internal  
**Place:** OGMCOAL  
**Attachments:** wetc terra sys history\_20080520120506.pdf

Please add these scanned documents to the information available for the WETC/TerraSystems/Combustion Resources partnership.

Priscilla Burton, CPSSc  
Division of Oil Gas & Mining  
317 Carbonville Rd.  
Price UT 84501

priscillaburton@utah.gov  
(435) 613-3733

Feb 1, 2007

## Board reviews proposal for coal coking facility at energy training ce

By RICHARD SHAW  
Sun Advocate publisher

A company that creates coking coal wants to set up an operation at the Western Energy Training Center.

The company is not only willing to rent the space at the facility, but will allow students who want to learn the technology operations involved in the coking coal process.

"This would be a good thing for WETC," pointed out College of Eastern Utah president Ryan Thomas during a recent trustees meeting at the center. "Our most critical need is not to produce someone who is trained on a specific piece of equipment or entire processes. A plant such as this would provide an on site lab for students to work with processes."

The adage advising people to worry more about being employable rather than employed appeared to be the theme of the meeting.

"We want courses taught here that prepare students directly for the workforce," said WETC director Steve Burge. "We want students in the position that they can be trained and work in many places in the energy industry."

According to information distributed at the meeting, the energy industry in Utah employed 13,277 people in Utah during

The employment growth in the field from 2001-2005 was more than 10 percent and that was before the energy boom and energy costs really kicked in.

In 2005, the average worker in the energy industry earned over \$70,000 per year.

"There would be a lot of benefits to having that operation located in one of our buildings," said Burge. "The operation would involve some new processes that haven't been done on a large scale in the United States. Because of the uniqueness of this we can qualify for some large grants. There is a lot of interest by many people in this because there is virtually no coke being produced in the United States right now."

Coke is a material derived from the distillation of low-ash, low-sulfur bituminous coal. Many of the constituents of the coal, such as water, coal-gas and coal-tar, are driven off during the process by baking coal in an oven at temperatures as high as 1,000 degrees Fahrenheit. The components of the coal are fused together. Coke is used as the main fuel in ironmaking blast furnaces, and therefore is used in making steel.

The idea of having a coking plant right with the educational facility ties in directly with a program that is presently just getting started at WETC and one that will produce a degree that is delivered to students nowhere else; a degree in energy process technology.

"This will be the first degree in the nation of its kind," said Bob Topping, the training director at WETC. "Energy development and production includes three basic fields; construction, transportation and processing. We want to concentrate on all of them, and a processing degree will be part of that."

According to WETC documents an energy process technician is a contributor to a team of people who are responsible for analyzing, controlling and troubleshooting operations in the production of energy products. According to those at WETC the skills that can be taught that will teach a student to work across industry lines, whether it be in coal, oil, gas or any other source.

The area of energy processing is one of the disciplines that will be most needed in the near future. Presently over 50 percent of workers in that area of expertise are over 50 years old, and many will retire in the next few years.

"The whole idea is to expand the labor pool in this area of energy production, there just aren't a lot of people to handle it," said Topping.

The board also received a program map from Topping that spelled out the goals and end results such as a program would provide for students. Courses on general and specific process technology, process troubleshooting, lean manufacturing, decision making and finance would be added to a basic set of educational classes that include chemistry, earth sciences, math and other fields.

"This entire program is not only about knowing, it is also about doing. When students come out of this program they will know why things are done and will also know how to do it," concluded Topping.

March 8, 2007

**TO: Internal File**

Wayne Hedberg, Permit Supervisor

**FROM: Coal Regulatory Program**

**NOTES / DOCUMENT PREPARATION:** Peter Hess, Environmental Scientist III

**ATTENDEES:** Mr. Steven Burge, Director, Western Energy Training Center  
Carbon County Commissioner  
Dr. Craig Eatough, President, Combustion Resources, Inc.  
Mr. Clayton Timothy, Foreman  
Peter Hess, DOGM

**PURPOSE:** To determine whether the **Western Energy Training Center / Coal Coking Facility**, an associate facility of the **College of Eastern Utah**, Price, Utah needs to be permitted under the R645 Coal Mining Rules

**MEETING SUMMARY:**

A newspaper article titled *"Board reviews proposal for coal coking facility at energy training center"* appeared in the Thursday, February 1<sup>st</sup> edition of the *Sun Advocate*, Price, Utah. Based upon information contained in that article, the reclamation specialist assigned to the Willow Creek Mine, C/007/038, felt that an inspection of the facility was necessary in order to obtain information about the proposal.

As documented in the November 16, 2006, DOGM inspection report for the Willow Creek site, "the Mine facilities from the access gate up Canyon to the propane storage tank facilities (including the Mine buildings) have received Phase III bond release from the Division (Task ID # 2521) as of May 9, 2006. The buildings are now owned by the College of Eastern Utah, and these constitute the Western Energy Training Center".

A meeting was set up through telecommunique with Mr. Steven Burge, Director of the WETC, Dr. Craig Eatough, President of Combustion Resources, Inc. and the Division representative; the meeting occurred on March 6, 2007. Mr. Clayton Timothy was also present, representing the Combustion Resource group.

Dr. Eatough started by stating that the development of the process was originally funded through DOW Corning. The finished product was to be used in the manufacture of silicone chips for the computer industry.

The set up of the proposed facility is being conducted inside the Willow Creek shop building. Mr. Timothy pointed out the various components and how they are being set up within the plants flow schematic.

The feed material (which is carbon black or soot, according to Dr. Eatough) is placed into a hopper, where it is blended with chemical binders and transferred to a drying unit, where the material comes out in the form of briquettes. The connecting feed hoppers and transfer mechanisms contain dust collection devices whose purpose is to eliminate dust particles from entering the outside atmosphere. The briquettes are placed on a conveyor which discharges the product into palletized containers. These containers are then placed under covered storage, where they can cure / dry. It is not known if the produced tonnage will be shipped at one time, or at various times via numerous truck loads.

The facility start-up is projected to be on or near March 12, 2007.

The feed material arrives at the WETC site in fabric containers, which are approximately five feet by five feet by ten feet in height. The facility does not intend to utilize open stockpiles at this point for feed material storage.

As noted above, the feed material is classified as carbon black, and not coal. At the present, the facility which is being built is a blending, briquetting facility. According to Mr. Timothy, 150 tons of briquettes are to be manufactured for testing purposes.

During the meeting, Mr. Burge and Dr. Eatough were provided with information which included the three points of the Divisions Title V Mission Statement, as well as the definitions of the following terms as contained within the R645 Coal Mining Rules;

- 1) Coal Mine Waste
- 2) Coal Preparation or Coal Processing
- 3) Coal Processing Plant
- 4) Coal Processing Plants Not Located Within the Permit Area of a Mine.

The Division discussed the standard chemical process of coke making, which uses the chemical process of destructive distillation to drive off the volatile matter from high quality bituminous coal. The process which Dr. Eatough has developed through Brigham Young University and a grant funded by the Inventions and Innovation Program in the Department of Energy's Office of Industrial Technologies uses a chemical process known as pyrolysis...

"Combustion Resources holds a pending patent on this process and is currently working to commercialize it", (quoted from the Combustion Resources web page, [www.combustionresources.com](http://www.combustionresources.com)).

Dr. Eatough stated that the facility which is being constructed at WETC is different than that which is discussed in the DOE Steel Project Fact Sheet, DOE/GO-102000-0833, Order #1-ST-726 (April 2000). That process uses coke dust and coal dust to make the briquettes.

Therefore, the development of this project goes all the way to Washington, D.C. and the U. S. Department of Energy.

Mr. Burge stated that the facility has applied for a Center of Excellence Program grant through the Governor's Office of Economic Development. "This program helps fund the process of moving the most innovative research from Utah's universities into businesses to create jobs for Utahns." (This quote is from the Center of Excellence web page, <http://goed.utah.gov/COE/index.html>).

The Division stressed that it was very interested in helping the facility in any way that it could relative to the development of coal in the State. The Division representative also stated that it was important to conduct all activities through the proper channels relative to obtaining permits for all activities, should it be determined that the process which is being developed at WETC is ready for commercialization.

#### PROPOSED ACTION ITEMS:

Mr. Steve Burge stated that it would be in the best interest of the WETC to keep the Division informed of the developments occurring on an ongoing basis.

Mr. Burge intends to invite the Division management team to the site when the facility becomes operational. It is hoped that this visit can be co-ordinated with the Governor's Office of Economic Development Center of Excellence Program award.

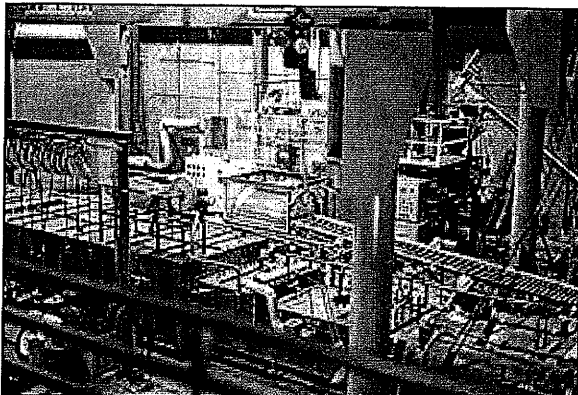
#### CONCLUSION:

- 1) The WETC is not using coal or coal fines as feed material in the process being developed.
- 2) The feed material which is currently being proposed is not stored in stockpiles which are exposed to the weather, and hence runoff from the material will not occur at this site.
- 3) The process does not emit any vapors or dust particles to the atmosphere.
- 4) The process is still being developed by the WETC / College of Eastern Utah for commercial use.
- 5) A permit which would address the requirements of the R645 Coal Mining Rules and UCA 40-10 is not necessary at this time.

*Center of Excellence Award for WETC*

*Award should be presented by Governor's office within 2-3 weeks*  
*The WETC/ Clayton Timothy Resources Combustion Briquetting Carbon Black Facilities*

## From coal to coke... new processes modernize an old fuel



The Western Energy Training Center showed Governor Jon Huntsman around the clean coke processing facility during his recent visit to Carbon County.

The goal of this project is to upgrade waste coals and make a clean burning fuel. Terra Systems, Inc., (TSYI) is a development stage company focused on advancing clean and renewable energy technologies and the company has teamed with WETC to run a prototype system facility.

The United States coke fuel market is highly dependent on foreign sources to meet demand. The U.S. currently produces less than 10 percent of the product necessary to support the \$50 billion worldwide coke industry. Production of Clean Coke briquettes will help decrease U.S. dependence on foreign fuel sources and provide a cleaner fuel to help meet ever increasing environmental requirements.

Most producers of coke utilize older technology that is very inefficient, thus producing heavy emissions and waste products. In contrast the Clean Coke process is "Greener" in all aspects of its operation and finished product. The process can utilize, as its feedstock, coal that oftentimes exists in waste piles at abandoned or existing coal mines. In addition, the patent pending process is designed to sequester the off gas into re-usable products and recover waste oils as a component in the feedstock blending. The finished Clean Coke briquettes can also be formulated to meet or reduce emissions when combusted in industrial furnaces.

TSYI will begin processing coal from various local coal producers, using their patented pneumatic accelerator system (PAS) technology by May. This will provide product to the new Clean Coking facility as well as the marketplace. TSYI has partnered with Combustion Resources (CR) to launch their patented process of upgrading specialty and waste carbon products into a clean coke. CR has combined their technology with the CR clean coke technology to provide a very high margin coke product.

Terra Systems, CR and WETC are in the final stages of finishing the installation of the PAS system to accept coal from local coal supplies and output feedstock to the pilot facility. The pilot facility at WETC should be complete and operational by the end of 2008.

The nominal value coal recovery process will utilize part of its product to provide the feedstock and pre-processing for the remaining upgraded coal product to industrial consumers.

Contracts already exist for all of the upgraded coal product produced from the coal recovery process. Customer orders for Clean Coke briquettes to be test burned in the end user furnaces already exceed the production capability of the pilot facility.

Upon successful completion of the pilot facility and testing at end user furnaces, TSYI plans to build four full scale Clean Coke facilities in the western U.S. by 2010.

In the past couple of years WETC and CR secured grant funding from the state of Utah to help build a full scale clean coke pilot facility, with the purpose of developing a solid training curriculum and process control methodology.

This funding was received through the Centers of Excellence program to assist the College of Eastern Utah and WETC in commercializing this technology. TSYI secured the exclusive licensing rights to the Clean Coke technology and has partnered with WETC in constructing and operating the pilot facility. The pilot facility will utilize a small portion of the coal product generated from the waste coal recovery process and generate a positive cash flow. The product generated from the pilot facility can be sold at market price to end users. The use of this pilot facility in support of workforce training, continued research and development, process control methodology, operational procedures and engineering design of full scale facilities will be invaluable to the roll out of the four full scale facilities.

WETC is a key part to training this next generation workforce. Bob Topping, director at WETC and MEP has been very instrumental in assembling academia and industry to develop a process methodology to support growth in rural Utah.

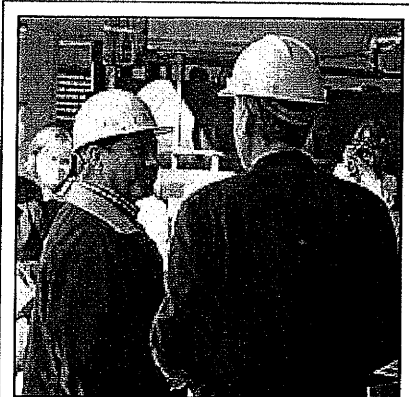
Regional, national and international industry demand for specialty carbon products utilized in high-temperature furnaces exceeds supply. Recent environmental related activities focused on the atmosphere, will continue driving stricter guidelines for utilizing coal and coke products. The pilot-scale facility will manufacture high-grade carbon (coke) briquettes, developed from and other low-quality mining by-products. The briquetted product can be used by metallurgical and specialty carbon-reducing. These fuel users require large runs of briquettes to test in their facility prior to switching their current fuel source to the new Clean Coke. The pilot facility will provide and sell sufficient finished product to conduct these full scale tests. Once the full scale Clean Coke facilities are operational, the Pilot facility can be modified to produce new test products without interrupting the operation of the full scale facilities.



Tim Gwyther explains the coke process to Governor Huntsman during his visit to WETC.

Many of the current producers of coke in the U.S. have captive customers and require additional imports to meet the demands. Most of the coke product is supplied out of the Asian markets, as the production capacity of the U.S. continues to decline. The decline in U.S. production has caused the price of higher grade coke to double over the past five years and forced the industry to consider alternative and oftentimes less desirable fuel sources. The production of Clean Coke products in the west could not only meet local requirements but address the increasing world demand. The PAS technology developed by TSYI is modularized and can be installed at various facilities to recover waste coals or other feedstocks.

Smaller runs of "green" test briquettes were produced through the first phase of the pilot facility in late 2007. The green briquettes hadn't been run through the briquette furnace to provide the structural strength of the briquettes, but were processed in order to see preliminary results. These results exceeded expectations and generated a strong industry demand, based on their physical characteristics. There are several end users who are banking their facilities future viability on the success of a Clean Coke facility. They can't meet the current environmental regulations without this alternate fuel source. They have already contracted for the briquettes through the fully functional pilot facility.



Clayton Timothy, CEO of Terra Systems talking to Governor Huntsman near the 12,000 ton per year clean coke pilot facility.

Tim Gwyther, at WETC is in charge of the coke processing test facility that is being brought into operation in one of the large buildings on site. Gwyther took Huntsman and explained the coke processing to him in detail as well as showing the equipment in place to date.

WETC is enthusiastic about the opportunities that will come to southeastern Utah because of the coke processing facility. Below is a summarization of expected benefits.

The benefits to Utah and the local area include:

- Over 200 high paying jobs will be created near Price over the next two years.
- Mine personnel can be re-trained to operate, control, manufacture and maintain clean coke facilities.
- Industry and academia are working together through the centers of excellence to roll out this revolutionary technology and business model.
- Utah Clean Coke technology will reduce foreign control of fuel supplies. Utah currently produces only 10 percent of the current world demand for coke fuel.

WETC will provide a world class training environment to train skilled workers on an actual production line. Training curriculum will include operators, maintenance, financial, engineers and managers.

From: Jim Smith  
To: Dana Dean; Daron Haddock; Priscilla Burton; Susan White  
Date: Wednesday, May 07, 2008 2:56 PM  
Subject: Re: Fwd: C/07/0045 COVOL Engineered Fuels, LLC.

What I get from the article is that TSYI takes COVOL's briquettes and turns them into coke at their prototype plant at WETC. The coal has been processed once by COVOL and that is the feed for TSYI's process.

Questions:

So is TSYI a consumer that turns out a product (coke) or are they just another coal processor. Is coke just coal or is it a distinct product? Are coking ovens regulated?

Is TSYI's facility a production facility, or a research facility? Does SMCRA cover research facilities? Are they selling product from the WETC facility, or just the process?

JIM

>>> Daron Haddock 5/7/2008 1:52 PM >>>

Priscilla sent the attached email some time ago. It has an article about the coking facility. It may be that the facility at WETEC is the prototype research version and the real facility is at COVOL, which we are in the process of permitting. Regardless, if OSM is asking about it, we probably need to talk about the facility and try to find out more about it. Priscilla, perhaps you could find out what they are really doing at WETEC and whether it is indeed coal processing? Do they have plans to produce coke at WETEC or it just a research facility? Thanks.