



OIL SHALE UPDATE

National Oil Shale Association

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New location for 2015 Oil Shale Symposium

The 35th annual Oil Shale Symposium will be held at a new venue this year.

This year's Symposium, hosted by the Colorado School of Mines and the Utah Governor's Office of Energy Development, will take place at the Hilton Salt Lake City Center Hotel in Salt Lake City, Utah, October 5th through 6th 2015.

The Symposium will be Co-Chaired by Laura Nelson, Director of the Governor's Office of Energy Development,

and Jeremy Boak, Director of the Oklahoma Geological Survey. The four-day event will review development of oil shale resources worldwide, including research and development, deployment and operations, impact analysis, regulatory framework, and project and program status. The full symposium agenda, including schedule, paper titles, and presenter information, will be made available in September.

The Annual Oil Shale Symposi-

um is directed towards all of those with a direct interest in oil shale development, technology, and regulatory issues, including engineers, scientists, stakeholders, and regulators.

An optional two-day field tour of key oil shale sites in the Uinta Basin will leave from Salt Lake City, Utah on Wednesday, October 7th at 8:00 AM and will return on Thursday, October 8th in the late afternoon. The trip, based out of Vernal, UT, will include visits to oil shale outcroppings, test sites and production facilities.

For more information, visit the Symposium website at <http://www.csmSPACE.com/events/>

NOSA has a NEW EMAIL ADDRESS!



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Special points of interest:

NOSA is now on social media!



Updated Educational Video

OIL SHALE—A VITAL DOMESTIC ENERGY SOURCE

available via YouTube on
NOSA Web Site
www.oilshaleassoc.org



*The Colorado School of Mines & The Utah Governor's Office of Energy Development
35th Oil Shale Symposium October 5 – 8, 2015
at the Hilton Center, Salt Lake City, Utah*

Penstemon Conservation Agreement Wins Award



GOVERNOR'S OFFICE OF ENERGY DEVELOPMENT

Advancing Utah's Energy Future

The Utah Governor's office of Energy Development created a new category in their Excellence in Energy Awards; *Energy Collaboration of the Year*.

The award was created based on NOSA's nomination of "A collaborative approach to conservation: The Penstemon Agreement." The agencies involved in developing a 15 – year Conservation Agreement to help protect 2 sensitive flower species in the Uinta Basin were awarded for their efforts by the Government of Utah at the Utah Governor's Energy Summit last May.

The agreement prevents a formal endangered species listing of the Graham's and

White River beardtongues, two species of penstemon that grown on or near oil shale outcroppings, by implementing a mix of local government protections and voluntary efforts by landowners, including oil shale development companies such as Enefit American Oil.

A number of local and federal agencies which were instrumental in forging the agreement shared in receiving the Energy Environmental Leader Award from the Utah Office of Energy Development. Uintah County led the effort and received the award along with to Rio Blanco County, Colorado; the Utah Division of Wildlife Resources; Utah's School and Institutional Lands Administration; the U.S. Fish and Wildlife Service's Utah Ecological Services Field Office and Western Colorado Field Office; Utah's Public Lands Policy Coordination Office; and the U.S. Bureau of Land Management's White River Field Office. Utah's oil shale industry worked closely alongside these government agencies to help develop the conservation plan, which is widely seen as a model for similar agreements around the country.

UNITED STATES OPERATOR UPDATES

REDLEAF

At the end of 2014, Red Leaf Resources had secured all permits, capital, and contractor relationships, and was under construction of its Early Production System (EPS), a commercial-scale demonstration project located on state land in Uintah County, Utah.

In early 2015, Red Leaf announced that it would slow construction of EPS in order to bring forward innovations that were anticipated for the full commercial capsule design, as well as innovations that will make Red Leaf's proprietary oil extraction process more efficient and better aligned with current oil market prices.

This project is a joint venture between Red Leaf and the French oil super major TOTAL, and utilizes Red Leaf's patented EcoShale® technology. In the EcoShale® process, layers of surface-mined oil shale are placed into large capsules which are lined with an impermeable barrier. Once the oil shale is encapsulated, hot gas will be injected until the shale ore reaches approximately 700° F, at which point vapors rich in hydrocarbons are released from the rock. A liquids collection pan at the bottom and slotted vapor collection pipes at the top of each capsule capture the oil products and feed them into a separation and processing facility. The capsule produces a high-quality, high 20's API grade liquid product with no bottoms or fines.

Red Leaf and TOTAL are making a significant investment into the innovations being brought forward, which were previously scheduled to take place after the first generation EPS had proven the scalability of the EcoShale® capsule. Once full con-

struction recommences in 1H 2017, the improved EPS will prove both commercial viability and competitive pricing compared to traditional and emerging resources.

London-based TomCo, a Red Leaf licensee with holdings in Uintah County, also has the requisite permits from the Utah Division of Oil, Gas & Mining and Utah Division of Water Quality, but will wait to commence full-scale commercial operations until Red Leaf completes the commercial demonstration project.

ENEFIT

Enefit American Oil (EAO) is continuing work on both its private and public RD&D lease holdings. Roughly 2/3 of the company's 3.5 billion in place barrels in place are located on private land. EAO is planning on continuing development of its Enefit South Project, demonstrating the applicability of its technology and modifying it to produce Utah oil shale. The company is working with its head office in Estonia on optimizing its processes and technologies.

The company's main permitting focus has been geared towards bringing utilities across federal land to its project located on private property. These include pipelines, power lines, water lines, natural gas lines, and road improvements. EAO is working with the BLM on an Environmental Impact Statement, and has been actively providing technical information to the agency to aid in its analysis, including engineering reports of water crossings and design details of the various transmission lines. A public draft of the EIS is expected to be released in the 3rd quarter of 2015.

EAO also surpassed an environmental obstacle earlier in the year when

it faced a potential endangered species listing of two types of penstemon, a rare desert flower. The listing was warded off by the development of a cooperative conservation agreement arrived at with various local and state agencies and other stakeholders. Nevertheless, several environmental groups have filed lawsuits to halt the projects by listing the species as endangered.

AMSO

American Shale Oil Corporation (AMSO), a partnership of Total and Genie Energy, is developing a first-round Federal RD&D Oil Shale Lease located in the Piceance Basin, Colorado. AMSO is preparing an in-situ pilot retort test that could result, under the terms of the Lease, in an application to the BLM for conversion to a 5120 acre commercial oil shale lease. The surface and subsurface pilot test facilities are substantially complete. In-situ electric heater reliability issues have prevented successful startup. The company is developing new in-situ heating systems for the pilot that are currently undergoing systematic performance and reliability testing.

AMSO will proceed with the in-situ test upon completion of this qualification process.

NOSA UPDATED EDUCATIONAL BROCHURE

*OIL SHALE—
AMERICA'S UNTAPPED ENERGY SOURCE*

**On Web Site
Hard Copies available
email request to NOSA**

NOSA Regulatory Update:

SAGE GROUSE:

Efforts are still underway in several western States, including Utah, Colorado, and Wyoming to thwart a listing of the Greater Sage Grouse as an Endangered under the Endangered Species Act, which many say would severely curtail or even halt economic activities such as oil shale development.

The U.S. Fish and Wildlife Service has until September 30 to announce a decision on a listing. The Agency had hoped to delay a decision, but was forced by dozens of lawsuits leveled by two environmental organizations to reach a settlement requiring the decision be made by the Sept. 30 deadline.



Ahead of the expected decision, several states have been working with local governments, industry, federal agencies, and other stakeholders to develop protection plans that would ward off a federal endangered listing and allow economic activity to continue.

Also in anticipation of the FWS decision, federal lawmakers have offered legislative fixes to preclude a listing. These include efforts by Republican Congressman Rob Bishop of Utah, and Colorado Republican Senator Cory Gardner, who have each introduced legislation aimed at prohibiting an endangered listing for several years, in order to allow state-designed plans to work. Rep. Bishop's bill, included as part of a Defense spending bill, would prohibit a listing for 10 years. The fate of these measures remains unclear.

SUPREME COURT KNOCKS DOWN EPA AIR REGULATION:

The U.S. Supreme Court ruled in late June against federal regulators attempts to control certain emissions from power plants.

In a 5-4 decision, the high court sided with several states who challenged the EPA's Mercury and Air Toxic's Standards, or MATS, a rule promulgated under the Clean Air Act, on the grounds that the agency failed to take into consideration the costs of implementing the new rule.

Writing for the Majority, Justice Antonin Scalia said that it was inappropriate for the agency to impose billions of dollars of costs in exchange for a few dollars of perceived health or environmental benefits; "EPA must consider cost -- including cost of compliance -- before deciding whether regulation is appropriate and necessary," Scalia wrote.

The case now goes back to the lower courts for the EPA to decide how to factor in the full costs of their regulation. EPA Administrator Gina McCarthy has said that the court's "narrow decision" will not affect other regulatory actions, such as the Clean Power Plan.

EPA GEARING UP TO RELEASE OZONE RULES:

The EPA is preparing to introduce what some industry groups have called the "most expensive regulations" ever implemented.

The federal agency will announce its new ground level ozone standards this fall. The new rules are expected to lower the standard from the current 75 parts per billion to 65 ppb. Industry groups warn that this could place large swaths of the country out of attainment, resulting in severe limits being put on any new or expanded economic development. They say that manufacturing, transportation, and natural resource development will be the hardest hit industries.

WATERS OF THE U.S.

The EPA released the final version of revisions to the Clean Water Act, which in part redefines which waterways are classified as "waters of the U.S." and thereby subject to federal regulation and protections. Proponents of the new rule say that it is necessary to protect drinking water supplies and streams from pollution due to weak state and local regulation, and say that the new rules provide "clarity" as to what water bodies are covered. But critics of the new rule say that the new definitions are too broad, including ephemeral streams, ponds, and ditches that "look and act" like tributaries, and that the rule will expand the federal government's authority over private land, and directly impact landowners, farmers, and industry.

So far, 29 states have filed lawsuits against the federal government seeking to stop the rule, and several industry groups are expected to do the same. There is legislation in both the House and Senate geared towards reversing the new rule.



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Roger Day, Chairman

NOSA Board of Directors

Roger Day was re-elected Chairman of the National Oil Shale Association (NOSA) for 2015 at its Board of Directors meeting in February 2015. Roger is Vice President of American Shale Oil, LLC (AMSO).

The 2015 NOSA Board of Directors: Roger Day (Chairman), Adolph Lechtenberger, Pierre Allix, Rikki Hrenko, Jean De Ridder and Gary Aho. Honorary Board members are Vincent Saubestre, Ed Cooley and Glenn Vawter. Secretary/Treasurer is Deena Stanley.

Nominations for two (2) directors positions from the Sustaining Members for 2 year terms that begin Jan 1, 2016 for any open positions and elections for those positions will be held at the Annual Meeting of Members.

The information presented in this document has been prepared by the staff of NOSA and is intended to give a snapshot of the status of oil shale technology and projects, and is not endorsed by the principals of those technologies or projects, or the members of NOSA. NOSA has drawn upon publically available information.

NOSA Celebrates Eight Years of Service

- The mission of the National Oil Shale Association (NOSA) is to educate the public about oil shale.
- NOSA is a not-for-profit 501(c)(6) corporation.
- The Association was formed in the 1970's when it actively engaged in oil shale education.
- NOSA was reinstated in 2007 in response to a renewed interest in oil shale.
- There are two classes of membership: Sustaining and Associate Members. Sustaining Members are profit making firms and Associate Members are individuals and not-for-profit groups.
- NOSA's Web Site at www.oilshaleassoc.org provides copies of the bylaws and a membership application.

Oil Shale Production Around the World

China currently produces shale oil and electric power from oil shale mined in the Fushun, Huadian, Huangxian, Junggar, Maoming, and Luozigou Basins, and from the Dalianhu and Haishiwan areas. Operating oil-shale retorting plants are located in Beipiao, Chaoyang, Dongning, Fushun, Huadian, Jimsar, Longkou, Luozigou, Wangqing and Yaojie. Evaluation is continuing in four other basins and a number of other areas, with a billion-tonne resource recently discovered in Heilongjiang Province. The major producing and developing companies are the Fushun Mining Group, the Maoming Petrochemical Co. (owned by SINOPEC), Longkou Coal Mining Co, Longteng Energy Company, Gansu and Saniang Coal Companies, Julin Energy & Communication Corp., and Petrochina. The gas-combustion Fushun retort is the dominant technology, and the Fushun district is responsible for about half of Chinese production. A new open pit mine opened in 2014 in Fushun. New retorts are being built rapidly in China—about 130 in 2014. Most of them use lump oil shale, but some retorts are now being built to process fines. An ATP retort in Fushun completed a 40-day commissioning run in 2014 at 70-80% of design capacity. Oil shale fines are also burned in fluidized beds for power production.

Estonia, the three producers are Viru Keemia Grupp (VKG), Eesti Energia (internationally known as Enefit), and Kiviõli Keemiatööstus. VKG is the largest oil producer in the country, commissioned a second Petroter plant in August 2014, and expects to bring a third unit on line in September 2015, which will raise their capacity to about 12,000 BOPD. VKG is planning a refinery targeting diesel fuel production with construction starting in 2016, and it continues efforts to reduce air emissions and produce building material from spent shale. Enefit produces 95% of Estonia's electricity from oil shale and operates two Enefit140 retorts producing shale oil at a rate of about 4,000 BOPD. It also continues commissioning its Enefit280 retort, and the plant has operated at over 80% capacity. New circulating-fluidized-bed technology has enabled Enefit to increase electricity production by 30% over the last five years while decreasing sulfur emission by 65%.

Brazil, Petrobras continues mining and retorting Irati oil shale, producing about 4000 BOPD using the Petrosix technology, with no expansion plans. Sartup Irati Energy Limited, owned by Forbes & Manhattant, is based in Southern Brazil and controls >3,100 km², with over 2 billion barrels of potential oil shale resources. It plans an 8,000-10,000 BOPD shale oil plant based on the PRIX technology, which is an incremental improvement over the Petrosix technology.

MEETING ANNOUNCEMENT

NOSA will hold its 2015 Annual Meeting of Members at 7:00 AM on October 6h in conjunction with the 34th Annual Oil Shale Symposium in Salt Lake City, Utah.

The public is invited to attend.

Jordan is pursuing oil shale aggressively, with a goal of producing 14% of its energy from oil shale by 2020. It currently has numerous Concession Agreements, Memoranda of Understanding, and a Power Purchase Agreement in place. Attarat Power Company (APCO; 65% owned by Enefit) received approval from Jordan's Ministry of Environment to proceed with a 554 MW oil-shale-fired power plant. Jordan signed a Power Purchase Agreement in October 2014, and the plant is expected to be operational at the end of 2018. APCO signed an engineering, procurement and construction contract with Guangong Power International Corporation in November to build the power plant. Enefit is also negotiating a separate agreement with Jordan to construct a 40,000 BOPD shale oil plant. Jordan Oil Shale Company (JOSCO, owned by Shell) has performed exploration drilling on its concessions and is preparing for a small-scale pilot test of its In-situ Conversion Process (ICP). JOSCO has decommissioned one drilling rig as it transitions from a drilling phase to a piloting stage of operations, which will provide important information about the resource potential and determine the next stage of its operations. Karak International and parent Jordan Energy and Mining Ltd (JEML) have completed an interim funding agreement underwritten by Sentient Group funds to pursue shale oil production project. Karak holds a concession for the Lajjun deposit that contains approximately 300 million barrels of oil in place, where it proposes to use the ATP technology, and it also has a Memorandum of Understanding (MOU) to explore oil shale at Al Nadiyya. Another MOU has also been signed between Jordan and a consortium of China's Shandong Electric Power Construction Corp and HTJ Group and Jordan's Al-Lajjun Oil Shale Company to produce 900 MW of electric power. Jordan also signed a MOU in 2014 with China's Fushun Mining Group Co to conduct geological and geophysical studies in the Wadi Al Naadiyah area. Jordan approved a concession in March 2013 to the Saudi Arabian Corporation for Oil Shale and a production agreement in March 2014 that is projected to produce 3,000 BOPD by 2019 and 30,000 BOPD using the Russian UTT-3000 technology. Other companies holding MOUs for shale oil production are Aqaba Petroleum for Oil Shale Co, which also proposes to use the UTT-3000 process, Global Oil Shale Holdings, which proposes to use the PRIX process, and Whitehorn Resources, which proposes to use the Red Leaf EcoShale Process.