



THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS®

Central Oklahoma Section Newsletter

Volume 16, Number 6, February 16, 2015

The Section is located at: Oklahoma Engineering Center, 201 Northeast 27th Street, Oklahoma City, OK 73105

The Central Oklahoma Section Newsletter is nominally published nine times per year to convey monthly meeting dates, meeting topics, section activities, and/or other ASME information to its membership.

******* JOINT ENGINEERING SOCIETIES BANQUET *******

PROGRAM: GE Oil & Gas Research Center Overview and Mission

SPEAKER: Mr. C. Michael Ming, General Manager of General Electric's Global Research Oil & Gas Technology Center

DATE: Thursday, February 26, 2014 **LOCATION: Gaylord Student Center, Oklahoma Christian University Campus, 2501 E. Memorial Road, Edmond, OK**



The Oklahoma Society of Professional Engineers Central/Southwest Chapter is again sponsoring the Joint Engineering Societies Banquet (JESB) that is held in conjunction with Engineer's Week. A number of students will also attend the banquet, including participants in Engineer for a Day, Future City, and MATHCOUNTS programs.

The event will be held **Thursday, February 26, 2015** at the Oklahoma Christian University Gaylord Student Center in Edmond, OK. **Ticket price is \$17.00 per person; tickets are most easily obtained on-line.** Banquet registration will begin at 5:30PM, followed by the catered meal at approximately 6:15PM.

The program will begin at approximately 7:30PM and feature Mr. C. Michael Ming, General Manager of the new GE Oil & Gas research center being constructed in Oklahoma City. This should be a great program!

Please join us for this banquet and program on February 26! JESB is always TERRIFIC!

Time: 5:30 - 6:10PM: Meet & Register at Oklahoma Christian University Gaylord Student Center.
 6:10 – 7:00PM: Catered Meal 7:00PM: Proceedings and Program by Mr. C. Michael Ming.

Cost: **\$17 for all attendees.** To order tickets, visit www.ospe.org and follow the JESB link on the front page. There you may order tickets and pay via credit card. Contact Curtis Vickery if you wish to pay by check. **All reservations must be placed by Monday, February 22.**

2014-2015 COS Executive Committee	<u>Directors</u>	<u>Ex-Officio Directors</u>
<p style="text-align: center;"><u>Officers</u></p> <p>Tom Betzen, P.E. Chair Michelin North America Bus: 580-221-2280; e-mail: betzent2@asme.org</p> <p>Doug Brown, R.E.M. 1st Vice Chair Ph: 580-695-2653 ; brownd919@asme.org</p> <p>John McCachern, P.E. Treasurer FAA Mike Monroney Aeronautical Center Bus: 405-954-1062; e-mail: mccachernj2@asme.org</p> <p>Frank Chambers, Ph.D., P.E...... Secretary Bus: 405-744-5901 ; chambersf@asme.org</p> <p>Albert Janco, P.E. Program Chair Membership Chair Consulting Engineer Professional Practice & Ethics Bus: 405-848-1991; e-mail: JANCOA@ASME.ORG</p> <p>Frank Parker, P.E. Webmaster, Scholarship Bus: 405-582-8813; parkerfj@asme.org</p>	<p>Mike Frey Director Ph: 405-341-4480 ; freym1@asme.org</p> <p>Edwin C. Reynolds Director Phone: 405-721-6753 ; edwin_c_reynolds@yahoo.com</p> <p>Ed Root Director Phone: 405-946-3254 ; emroot@cox.net</p> <p>Chulho Yang, Ph.D. Director, K-12 Bus: 405-744-3033 ; chulho.yang@okstate.edu</p> <p>Curtis Vickery, Ph.D., P.E...... NL Editor Corken, Inc. Bus: 405-609-1172 ; vickeryc1@asme.org</p> <p>Nathan Weber, P.E. Director Phone: 405-595-7415 ; webern2@asme.org</p> <p>John Heaton, P.E. Director Phone: 580-251-4166 ; heatonj2@asme.org</p>	<p>Wayne Whaley, Ph.D. OC Bus: 405-425-5424 ; wayne.whaley@oc.edu</p> <p>Cengiz Altan, Ph.D. OU Bus: 405-325-1737 ; altan@ou.edu</p> <p>Daniel E. Fisher, Ph.D. OSU-MAE Bus: 405-744-5900 ; dfisher.okstate.edu</p> <p style="text-align: center;"><u>Faculty Advisors</u></p> <p>Bill Ryan, Ph.D. OC Bus: 405-420-1987 ; bill.ryan@oc.edu</p> <p>Feng C. Lai, Ph.D. OU Bus: 405-325-1748 ; flai@ou.edu</p> <p>Ron Delahoussaye, Ph.D. OSU-MAE Bus: 405-744-5900 ; dela@okstate.edu</p> <p>Rick Beier, Ph.D. OSU-MET Bus: 405-744-9371 ; rick.beier@okstate.edu</p>

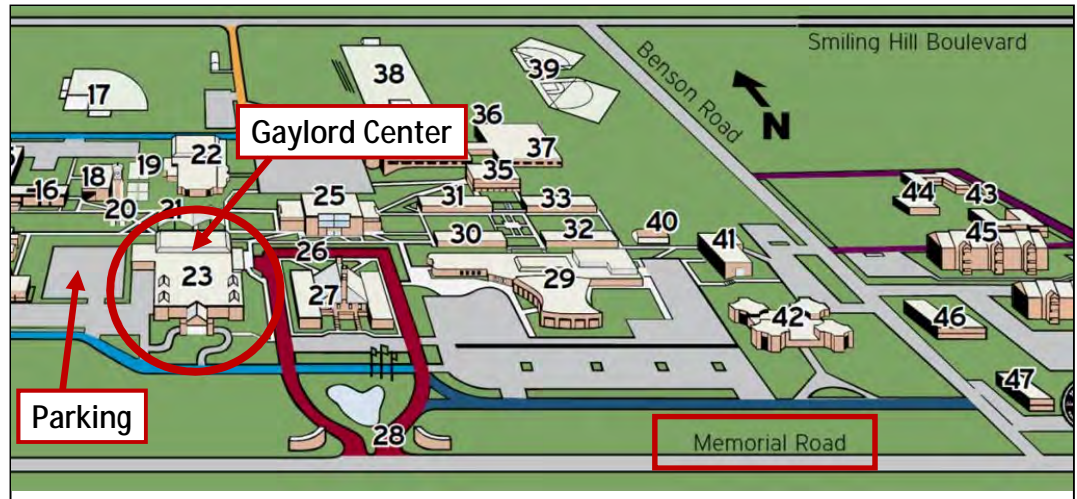


ADDITIONAL FEBRUARY MEETING INFORMATION

Mr. C. Michael Ming, a Registered Professional Engineer (Oklahoma), currently serves as the General Manager of General Electric's Global Research Oil & Gas Technology Center in Oklahoma City. He has formerly served as the Oklahoma Secretary of Energy under Governor Mary Fallin, as President of the Research Partnership to Secure Energy for America, and as a Managing Member and Principal of K. Stewart Energy Group and K. Stewart Petroleum Corp.

Mr. Ming holds a BS degree with distinction in Petroleum Engineering and an MS degree in Engineering Management, both from Stanford University. At Stanford Mr. Ming is an emeritus member and past Chairman of the Petroleum Investments Committee and currently serves on their Earth Science Advisory Board.

Mr. Ming currently serves on advisory boards at the Univ. of Texas BEG and Tulsa University. He has also served on the MIT Future of Natural Gas Study, the Oklahoma Clean Energy Independence Commission, and as an adjunct professor in Energy Management at the University of Oklahoma.



MEMBERS NOTE: OEF Engineering Fair Friday, February 27th with our Rubber Band Powered Vehicle Contest



The annual Oklahoma Engineering Fair will be held Friday, February 27th, at the Oklahoma Science Museum in OKC. The Oklahoma Engineering Foundation (OEF) sponsors the event that fortunately returns to the wonderful Science Museum/Omniplex venue where students can experience a variety of engineering and science exhibits.

The Engineering Fair offers engineering competitions including Bridge Building, Eiffel Tower, Electric Motors, an Essay competition, Ping Pong Ball Launcher, Wacky Wonder Works, and the **Bruce Stout Rubber Band Powered Vehicle Contest** sponsored by our ASME Central Oklahoma Section.

Additional information on the 2015 Engineering Fair is available at <http://www.oef.org/> (follow the link).

NOTE: We can always use volunteers to help with our Rubber Band Powered Vehicle Contest. **If you would like to help, please contact Ed Reynolds or Albert Janco** (see page 1 for contact information).

HELP NEEDED TO CRITIQUE OU-AME STUDENT PROJECT PROCEDURES

Dr. Diana Bairaktarova is an ASME member and Assistant Professor of Engineering Practice in the OU Aerospace and Mechanical Engineering department. She is in the process of evaluating results from a study and needs our help!

The focus of her study is on different ways engineering students learn:

- One of the activities for the study is asking first-year engineering students to write an assembly procedure for building a solar boat.
- Part of the study assessment is to have professional engineers evaluate the students written procedures.

Dr. Bairaktarova needs 10 engineers to evaluate the students' procedures. Each engineer will have 30 procedures. The assembly procedure is less than a page and will not take a person more than an hour to evaluate 30 procedures. She has an example of an assembly procedure with 1 - 5 grading scale and only three evaluating criteria.

She has collected relevant data and is ready to communicate all details with engineers prior that are willing to help. Her plan is to begin the analysis in February with completion by mid-February.

Please contact Dr. Bairaktarova if you would like to help! See her web page at:

<http://www.ou.edu/content/coe/people/bairaktarova.html> or e-mail diana.bairaktarova-1@ou.edu

NEWS ITEMS OF INTEREST

Hidden Faults Explain Earthquakes in Fracking Zones

by Becky Oskin, via <http://news.yahoo.com/hidden-faults-explain-earthquakes-fracking-zones-195407215.html#>

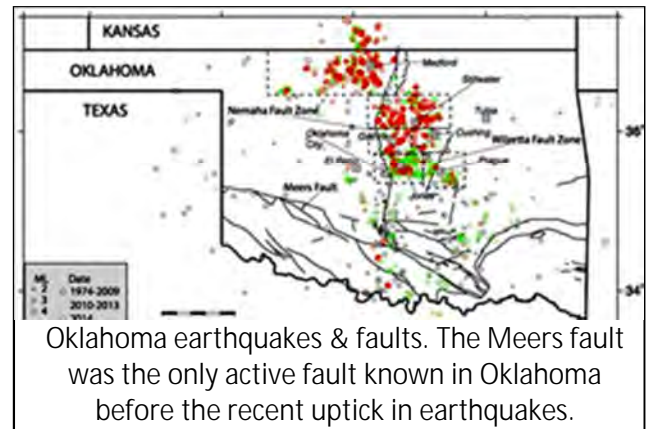
Oklahoma, Ohio and Arkansas have experienced an unusually large number of earthquakes in recent years. The shaking is rising at the same time that oil and gas production has increased. But other states that are hotbeds for new drilling have stayed seismically quiet, such as Montana, North Dakota and South Dakota.

Now, two new studies explain why some regions of the country are rattling more than others. In Oklahoma, hidden faults beneath the surface are primed to pop, reports a study published Jan. 27 in the journal *Geophysical Research Letters*. Some of these faults were previously unknown and threaten critical structures, such as huge oil-storage facilities, said lead study author Daniel McNamara, a U.S. Geological Survey research geophysicist based in Golden, Colorado. But the geology underlying Montana and the Dakotas is more benign, with fewer faults near their breaking point, according to a study published Feb. 10 in the journal *Seismological Research Letters*.

In the first study, the U.S. Geological Survey (USGS) analyzed more than 3,600 recent Oklahoma earthquakes to precisely locate known and unknown faults. The majority of the faults are perfectly aligned to slip under pressure transmitted through the continent from faraway tectonic plate boundaries, the study reports.

Oklahoma's buried rock layers are squeezed in an east-west direction from forces at the Mid-Atlantic Ridge, San Andreas Fault and Juan de Fuca Ridge, McNamara said. But the underground faults identified in the study tilt to the northwest or northeast, creating an angle of about 30 to 40 degrees from this regional pressure.

"This is the optimal orientation for producing strike-slip faulting," McNamara told *Live Science*. If the faults were more steeply tilted in either direction, it would be harder to force them to jerk apart. (Imagine mashing together two bricks that point toward noon on a clock if your hands are at 9PM and 3PM. Now rotate those two bricks toward 1:30PM and squeeze them the same way — they slide against each other more easily.)



Old faults awakened: Oklahoma's faults are left over from pushing and pulling that occurred in North America some 300 million years ago. These faults are being awakened by oil and gas drillers who are injecting fluids into the deep underground rocks above the layers that host the faults, according to several previous studies. These fluids reduce pressure on the faults just enough for the rocks to slip apart, triggering earthquakes.

"These faults are all in rock layers that existed when the dinosaurs were around," McNamara said. "Some of them haven't been active since then, and now one of the major questions is why they are reactivating."

Oklahoma has more than 3,000 injection wells, where water left over from hydraulic fracturing, also called fracking, or from oil and gas drilling is disposed of deep underground. State officials shut down a well last week after it triggered a moderate earthquake.

However, the new study does not draw a link between oil and gas drilling and Oklahoma's earthquakes. Instead, the research team set out to locate the state's underground faults to help give experts a better idea of how large of an earthquake is possible in the state. "We're identifying faults that nobody knew about before," McNamara said.

The research is part of a massive effort to rejigger the nation's seismic hazard maps to account for man-made earthquakes. This year, for the first time, the USGS will publish hazard maps that include earthquakes caused by human activity.

McNamara said Oklahoma's potential for shaking will increase significantly in the future maps. Oklahoma's earthquake rate is now 40 times higher than it was 30 years ago.

"What's happening in Oklahoma, whether it's natural or induced by oil and gas, is affecting structures and homes," McNamara said. "There needs to be an assessment of building codes, and one of the major parameters [of that] is where are the active faults."

Some of the previously unknown faults threaten critical oil industry infrastructure, such as the enormous, privately owned storage facilities in Cushing, Oklahoma, the study reports. There is a fault directly underneath Cushing's airport and the oil storage facility, where 100 million barrels of oil may sit on any given day, McNamara said.

Drilling without quakes: Despite the huge escalation in Oklahoma's seismicity, some 30,000 wastewater disposal wells operate in the United States without triggering damaging earthquakes. For instance, North Dakota is the second-largest crude oil producer in the United States, but recorded only nine earthquakes between September 2008 and May 2011, according to the new Seismological Research Letters study. And the study authors attribute just one of those nine quakes to oil and gas production.

While less is known about the geology underlying North Dakota because it is so seismically quiet, the study authors suggest that local geology plays a role. The faults and regional pressure are less favorably aligned to trigger earthquakes. However, the amount of fluids injected into underground rock layers in the Dakotas could also be important, the researchers said. Oklahoma has some of the highest-volume injection wells in the country.

Follow Becky Oskin [@beckyoskin](#). Follow LiveScience [@livescience](#), [Facebook](#) & [Google+](#). Originally published on [Live Science](#).

Upcoming E-Week Events Highlight the Value and Impact of Engineering

(via: <https://www.asme.org/about-asme/news/asme-news/upcoming-eweek-events-highlight-value-impact>)

Although Engineers Week 2015 is officially scheduled to take place from Feb. 22 to 28, the celebration has expanded far beyond that one week. DiscoverE, the organization that manages Engineers Week, has organized a lineup of events that begins next week with the Future City Competition finals and continues into March with the three-day Global Marathon event for women in engineering and technology.



This year, the festivities will kick off a few days before the official start of Engineers Week with the championship round of the Future City Competition, which will be held Feb. 17-19 at the Capital Hilton in Washington D.C. For this year's competition, teams of sixth-, seventh- and eighth-graders from across the U.S. were asked to design and build a model of a futuristic urban farm community. The winners of the regional competitions will present their Future Cities at

the finals, where they will compete for the first prize — a trip to the U.S. Space Camp in Huntsville, Ala. — as well as a number of other special awards, including the Best Futuristic City Award from ASME. For more information on the Future City Competition, visit <http://futurecity.org>.

The finalists for the Professional and College Editions of DiscoverE's New Faces of Engineering program will be announced during a one-hour webinar, "Volunteerism = Professional Development," on Feb. 19. New Faces-Professional Edition highlights the innovative work of early career engineers up to the age of 30 and their impact on society, while New Faces-College Edition recognizes engineering students for their successes both inside and outside of the classroom. ASME's three candidates for each of the New Faces categories will be announced in the next issue of *ASME News*. The official winners in each category will be announced April 2. [Click here to register for the Feb. 19 webinar](#). For more details on the New Faces program, visit www.discovere.org/our-programs/awards-and-recognition.

One of the highlights of Engineers Week, Introduce a Girl to Engineering Day on Feb. 26, will encompass hundreds of events taking place across the United States. These workshops, lab tours, online discussions, and hands-on projects at companies, universities and other locations will give young women the chance to experience the excitement of engineering and learn about engineering careers from women who work in the profession. To learn more and watch a short video about Girl Day, visit www.discovere.org/our-programs/girl-day.

Another Engineers Week staple, Family Day in Washington, D.C., will take place on Feb. 28. The event, which will be held at the National Building Museum, will feature nearly 30 exhibitors presenting hands-on and thought-provoking activities exploring basic science and engineering principles. The daylong event, which attracts thousands of attendees each year, is designed to introduce students between the ages of four and 12 to the wonder of engineering and the importance of technological literacy. To learn more, visit www.engineeringfamilyday.org.

The celebration of engineering doesn't end on Feb. 28, however. From March 9 to 11, DiscoverE will present the 2015 Global Marathon, a free, online event for women in engineering and technology worldwide. The event, which coincides with International Women's Day, will consist of a globally connected group of live webcasts as well as locally organized, in-person satellite events taking place throughout the world. Scheduled webcast speakers include Megan Smith of the United States Office of Science and Technology Policy, as well as representatives from DuPont, Fluor Corp., 3M and IBM.

This year, each of the three days will focus on a specific theme: "New Horizons for Women in Engineering and Technology" on March 9, "Your Horizon: Finding Perspective" on March 10, and "Explore Your Next Horizon" on March 11. To learn more about the Global Marathon, or to register, visit www.discovere.org/our-programs/global-marathon.

DiscoverE is currently accepting nominations for another program, the 2015 DiscoverE Educator Awards, which recognizes the work of middle- and high-school teachers who are inspiring the next generation of engineers. Up to three winners will receive a trip to Washington, D.C., for a recognition event in June, a \$2,000 cash prize, and a gift pack of 3M classroom supplies. The deadline for nominations is March 16, and the winning teachers will be notified in April. For additional information or to submit a nomination, visit www.discovere.org/our-programs/awards-and-recognition/nominate-someone.

To find out more about Engineers Week and its schedule of events, visit the DiscoverE website at www.discovere.org/our-programs/engineers-week.

New Briggs & Stratton lawn mower engine never needs an oil change

by Rick Barrett of the Milwaukee Journal Sentinel, January 31, 2015

(<http://www.jsonline.com/business/new-briggs--stratton-lawn-mower-engine-never-needs-an-oil-change-b99433283z1-290423731.html>)

Calling it an end to a messy annual ritual, and a first for the outdoor power equipment industry, Briggs & Stratton Corp. has developed a lawn mower engine that never needs an oil change.

The new engine will be available this spring on certain Toro, Craftsman, Snapper, Troy-Bilt and Yard Machine walk-behind mowers. Its air intake system is sealed tighter so that dirt doesn't get inside the engine and contaminate the oil, and the engine runs cooler so that heat doesn't break down the lubricant.

"If an engine runs cooler, with less debris in the oil, it will last longer," said Rick Zeckmeister, Briggs vice president of marketing and planning.

The four-stroke mower engine is designed to last the life of the equipment it's used on, which could be about 12 years, without an oil change. Briggs says the engine will set a precedent in the lawn and garden equipment industry, and none of its competitors has an engine that doesn't require an oil change.

The new design stems partly from consumer research that showed people understood the value of changing engine oil, to increase the life span of their mower, but they didn't necessarily perform the maintenance.

Walk-behind mowers usually have to be tipped upside down to drain the oil, and then there's the hassle of disposing the used lubricant. If you're not careful when doing an oil change, you also could introduce dirt into the engine which causes premature wear.

"It's just messy, and sometimes you do more damage than good," Zeckmeister said.

The new engine comes on mowers priced from \$250 to \$400, in power ratings of 6.75- and 7.25-foot pounds of torque. Briggs says it has an automotive-style air filter to keep out debris, a new cooling fan for optimum airflow, an automotive-style piston and rings, and an overhead-valve design that rejects exhaust heat through the cylinder head, away from the oil.

The engine is being produced at a Briggs plant in Poplar Bluff, Mo. The plant was completely rebuilt to provide better control over the manufacturing process, Zeckmeister said.

Oil is the lifeblood of an engine. It protects the moving parts but gradually loses that ability as heat, dirt particles, moisture and air break down the lubricating properties.

The new engine uses the same oil as other Briggs engines. You still have to add it occasionally, but an improved oil-fill tube helps keep debris out, and an improved fuel spout helps prevent gasoline spills.

Briggs, the world's largest manufacturer of small gasoline engines, has logged hundreds of hours testing the new design, including field tests in dirty conditions in Florida. In the future, the company plans to use the design on other outdoor power products besides walk-behind mowers.

The challenge was to produce an engine that was powerful enough, durable, affordable, and didn't require an oil change. "Nobody wants a disposable lawn mower," Zeckmeister said.

Still, some say that consumers now expect to use all kinds of products a few years and then throw them away.

"People don't buy something with the idea of maintaining it for 10 or 12 years. Unfortunately, that's not the mind-set anymore," said Patrick Hanson, an engine mechanics instructor at Milwaukee Area Technical College.

The lack of maintenance is the No. 1 reason lawn mowers fail prematurely, Hanson said.

Even an engine that the manufacturer says never needs an oil change would benefit from it, according to Hanson.

"I would still recommend changing the oil once a year," he said.

With its other mower engines, Briggs recommends an oil change about every 25 operating hours.

"Just like the oil in a vehicle operated in extremely dirty or dusty conditions at high speeds, the oil in a lawn mower or other small engine breaks down faster under tough conditions such as wet grass, heavy dust, high temperatures, and rough or hilly terrain," the company says on its website.

There's no need to change the oil with the new Briggs engine, but it won't hurt if you do it anyway, according to the company.



Chair's Corner

VERY IMPORTANT QUESTION to ALL members of the ASME Central Oklahoma Section; if you are really curious of the MAJOR changes that ASME is making to our international engineering society - join the Group Pathways & Support (GPS) Group page for all future & pending updates and NETWORKING opportunities available to ALL of our fellow ASME members. **Details on how to join either the GPS or Central Oklahoma Section Group page was detailed in my last two newsletter Chair's Corner comments.** Since we will be loading our Newsletters and other announcements on the Central Oklahoma Section Group page, it is recommended that you join this group ASAP.

Happy networking and please make plans to join us on February 26th for the Joint Engineering Societies Banquet. A terrific evening and in-the-news program is promised. All ASME-Central Oklahoma Section members, students, and guests are welcome to join us.

Tom Betzen, Chair, ASME Central Oklahoma Section

Future ASME-Central Oklahoma Section Events

Date	Location	Program Topic and Speaker
Thursday Febr. 26, 2015	Okla. Christian Univ. Gaylord Student Center Edmond OK	Joint Engineering Societies Banquet Speaker: Mr. C. Michael Ming, General Manager, New GE Oil & Gas Research Center in OKC
Friday Febr. 27, 2015	Okla. Science Museum 2100 NE 52nd St, Oklahoma City, OK	OEF Oklahoma Engineering Fair Oklahoma Science Museum
Thursday March 26, 2015	TBD	Ethics Meeting
Thursday April 23, 2015	TBD	Honors and Awards Meeting

Please visit our Section website:

https://community.asme.org/central_oklahoma_section/default.aspx

IT'S BEEN REVAMPED. Check event updates and other useful information!