



## CCT Weekly June 26- July 2, 2011

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### LSU Professors Seek Methods to Cap Subsea Blowouts

The recent BP oil spill shook the Gulf Coast and brought to the nation's attention the immediate need for a quicker capping system for a subsea well blowout.

Records show it took 87 days for the Macondo well to be capped, after releasing 4.9 billion gallons of crude oil into the Gulf of Mexico.

After the great length of time it took to cap the oil flowing out of the Macondo well, and the hazardous effects the spill had on the surrounding wetlands and environment, developing a method to lessen the time it takes to cap a subsea blowout is highly sought after.

Mayank Tyagi, LSU assistant professor of the Craft and Hawkins Department of Petroleum Engineering and the Center for Computation & Technology, is part of a team that was awarded \$244,999 for one year from the BP Gulf Research Initiative for the project titled, "Functional Design and Sizing for Subsea Capping System."

The goal is to find out what the minimum, mandatory capabilities are for a generally applicable, quick response subsea capping stack and what supplementary capabilities should be provided by additional modules to achieve all of the functions likely to be necessary for an effective subsea capping, containment, and intervention system. Another aspect of the research is to find out what the required sizes, pressure ratings, and geometries for these components are.

Aiding in the research is Adam T. Bourgoyne Jr., president of Bourgoyne Enterprises, Inc. and LSU professor emeritus, College of Engineering. He has 20 years of experience in conducting multi-investigator research to develop new blowout prevention methods and procedures and has been involved in multiple successful blowout control efforts by industry. Darryl A. Bourgoyne, LSU instructor in the Craft and Hawkins Department of Petroleum Engineering and director of the Well Facility, will also bring expertise and leadership to the project, having prior deepwater well supervision and engineering and research experience investigating deepwater well designs.

"Reducing the time required to cap a subsea blowout has the greatest potential for reducing the environmental impact and economic costs associated with such an event," said Adam Bourgoyne.

"There is a billion dollar industry consortium currently developing standby equipment to respond to future subsea blowouts, but it is strongly influenced by the need to assemble a deployable system quickly so that the deepwater drilling projects can be resumed," said Tyagi. Tyagi's group will provide an independent view to define the design issues related to a subsea capping stack system.

"A generally applicable well containment and intervention capability is a necessary component on an effective system for quickly responding to future deepwater blowouts. A capping stack minimizes the environmental pollution by stopping the flow of oil from the well, whereas other collection and clean up responses do not address the fundamental issue of stopping the pollution," said John Rogers Smith, LSU associate professor of the Department of Petroleum Engineering, who serves as the lead investigator for the project.

The research team will review the available loss-of-well-control incident records over the past 15 years to identify the operational requirements for the new system. The factors studied will be analyzed to 1) imply the worst case magnitude and the critical factors that could have contributed to a worse release and 2) what containment methods would have been likely to be most effective in minimizing the release and the related pollution and hazards for the range of circumstances that could occur.

Another investigation will identify the range of well depths, formation characteristics, and well geometrics representative of deepwater wells that could be sources of major hydrocarbon releases. That knowledge will be used to determine the sizing, pressure ratings, and the internal geometry needed for components of the proposed system.

The results of the two investigations will be the basis for a system analysis to determine what minimum common capabilities should be included in the base module, what other capabilities can be most practically combined within additional modules and how modules should be mated to provide a complete system with the necessary functionality for a given situation. Software will be developed to allow evaluation of a particular configuration for a given situation and assist in identifying weaknesses that require supplementary capabilities.

For more information on this project, visit <http://www.cct.lsu.edu/~mtyagi/>

### CCT Spotlight: Georgios Veronis

Georgios Veronis is from Athens, Greece. He is an Assistant Professor in Electrical & Computer Engineering and he joined the CCT in 2008 as part of the Material World Focus Area. He is married and has one daughter.

Georgios is currently working on nanophotonics, nanoscale plasmonic devices, and nanostructures for efficient photovoltaics.

When asked why he does what he does, Georgios said, "I enjoyed electromagnetics and numerical analysis when I was an undergrad. That led me to modeling of a wide range of phenomena and devices related to electromagnetism such as microwave antennas, interaction of electromagnetic pulses produced by lightning discharges with the ionosphere, plasma display panels, and nanoscale photonic devices."

The iPhone is Georgios' favorite gadget and favorite place to vacation is Naxos Island in the Aegean Sea.

Georgios' prescription for life is, "Do what you have to do and eventually you will be rewarded."

### Please Note:

- The University will be closed Monday, July 4th in observance of Independence Day.
- On May 9th, Governor Jindal issued Executive Order BJ 2011-7 that directed executive branch agencies including higher education to cease spending in support (non-personnel) categories. Since the University has not received guidance on how to implement this executive order, LSU has developed operating guidelines to meet the spirit of the order through June 30, 2011. These Guidelines apply only to expenditures using State appropriated funds that are included in the University's FY 2010-11 Operating Budget and so identified with a zero in the sixth digit of the account number. Please contact CCT Business Manager Theresa Markey ([tmarkey@cct.lsu.edu](mailto:tmarkey@cct.lsu.edu)) with

any questions.

- LSU CCT will host two onsite computational science courses being offered by the Virtual School of Computational Science and Engineering. The first course is "Petascale Programming Environments and Tools" (July 12-15). Graduate students, post-docs and professionals from academia, government and industry can gain the skills they need to leverage the power of cutting-edge computational resources at these courses, which are being offered for a \$100 per-course fee. Each course is one week long. For more information, visit <http://www.cct.lsu.edu/PetascaleLSU>.
- The LSU Center for Computation & Technology will host for the first time the LSU iOS Application Boot Camp August 1-12 (10 day camp; not including weekends) on the LSU Campus. This new educational experience offers LSU undergraduates the opportunity to gain knowledge while enhancing their entrepreneurial spirit. Participants will work in groups to create their own operating App and have it loaded on their personal device by end of camp. Registration fee is \$300. For more info and to register, visit <http://www.cct.lsu.edu/iosbootcamp>
- Registration is open for "Stop Motion Summer Camp," July 11-15, 2011. This exciting summer education opportunity offers high school students a unique opportunity to build upon their interests in animation. Registration fee is \$125. For more information and to register, visit <http://www.cct.lsu.edu/StopMotion>
- Applications for the SC11 Student Volunteer Program are open and close on August 12, 2011. Undergraduate and graduate students are encouraged to apply as volunteers to help with the administration of the conference. In exchange for volunteering, they will receive complimentary conference registration, housing, and most meals. In addition, limited support will be provided for transportation expenses (such as airfare) for international students and students from groups that traditionally have been underrepresented in HPC. For more information visit <http://sc11.supercomputing.org/?pg=studvol.html> or email [student-vols@info.supercomputing.org](mailto:student-vols@info.supercomputing.org).
- LONI Technical Forum scheduled for July 18-19 at Pennington Biomedical Research Center is now accepting registrations. Participation is FREE. If you wish to suggest a topic for discussion, email Lonnie Leger at [Lonnie@lsu.edu](mailto:Lonnie@lsu.edu). For more information, visit: <http://www.cct.lsu.edu/LONIForum2011>
- Prior approval is required for Special Meal Requests. Employees who make meal purchases without prior approvals may find that they must cover the cost of any monies spent for an unapproved event out of pocket, especially now that state funds are under a spending freeze. Please contact Susie Poskonka ([susie@cct.lsu.edu](mailto:susie@cct.lsu.edu)) prior to any special meal with visitor(s) to file the appropriate request for approval. Prior approval could take up to two weeks, so please plan accordingly.
- Please remember to send your news concerning grants, awards, conferences, or other pertinent information to CCT Event Coordinator Jennifer Fontenot at [jennifer@cct.lsu.edu](mailto:jennifer@cct.lsu.edu)
- Follow CCT with social media to access photos and see news, events or updated information. These pages are public; you do not need an account to view the information.
  - o [Facebook group](#): LSU Center for Computation & Technology
  - o [Twitter](#): LSUCCT
  - o [YouTube channel](#): LSUCCT

#### Upcoming events:

**May 30- July 29:** [NSF Research Experience for Undergraduates](#)

**July 11-15:** [Stop Motion Animation Summer Camp](#)

**July 12-15:** [Petascale Programming Environments and Tools](#)

**July 18-22:** [Alice in Computation Land Summer Camp](#)

**July 18-19:** [LONI Tech Forum](#)

**July 31- Aug 6:** [Computational Thinking from a Parallel Perspective](#)

**August 1- 12:** [iOS Boot Camp for LSU Undergraduates](#)

**August 9-11:** [SIGGRAPH](#) (Booth #841), Vancouver, Canada

**August 15-19:** [Proven Algorithmic Techniques for Many-core Processors](#)

#### Upcoming Grant Deadlines:

**Note:** Please check the [CCT deadline Web site](#), since it is updated daily.

[Software Infrastructure for Sustained Innovation \(SI2\)](#).

July 18, 2011 10:00 am

At Most \$ 1,000,000.00 available

[Faculty Early Career Development \(CAREER\) Program](#)

July 23, 2011 10:00 am

At Least \$ 400,000.00 available

#### Publish Date:

06-28-2011