

Safer Offshore Energy Systems Grants 3

Topic: Preventing the Next Spill: Understanding Systemic Risk in the Offshore Oil and Gas Environment

Grant Type: Research & Development

Key Dates

Letter of Intent

December 7, 2016: Online Submission of Letter of Intent Opens (CLOSED)

February 1, 2017, 5:00pm ET: Letter of Intent Due (CLOSED)

A Letter of Intent is required for this funding opportunity.

Full Proposal

February 2, 2017: Online Submission of Full Proposal Opens (CLOSED)

April 12, 2017, 5:00pm ET: Full Proposal Due (CLOSED)

Fall 2017: Award Announcement

Purpose

With this grant opportunity, the Gulf Research Program (GRP) seeks to support research that will advance fundamental science or provide the scientific basis for the development of new technologies, processes, or procedures to reduce or better understand the systemic risk leading to uncontrolled hydrocarbon release in the offshore oil and gas environment. Proposed research should address scientific and/or technological research gaps identified in literature, by industry, or by regulatory agencies – gaps that, if filled, could result in a reduction of systemic risk in the offshore oil and gas environment.

Context

Comprehensive awareness—across industry and regulatory communities—of risks, drivers of risk, and steps to mitigate risk, is needed to reduce existing risks and to anticipate and avoid new risks related to offshore oil and gas operations. This funding opportunity seeks to identify and fund fundamental research and/or technological development to spur innovation that improves understanding and management of systemic risk. By understanding systemic risk, we mean understanding the components of the system, the system itself, and how humans interact with the system, in which a failure of any part could lead to failure of the system as a whole.

What we are looking for

For Award Year 2017, we seek proposals for advancements in fundamental science and technology that reduce or result in a better understanding of the systemic risks leading to uncontrolled hydrocarbon release during drilling, production, or decommissioning activities in the Gulf of Mexico or other U. S. outer continental shelf regions that support oil and gas production.

Areas of particular interest to this topic include, but are not limited to:

- Formation rock mechanics: Advancement of the capacity to predict a subsea well control situation breaching the seafloor or breaching the surrounding formation.
- Well and production system integrity: Assessment of the integrity of the overall engineered production system, as it interacts with the earth.
- Wellsite data: Identification of precursors to loss-of-control incidents and/or increased understanding of process safety using detailed wellsite data.
- Kick detection system: Identification of early kick detection and improvement of the understanding of kick precursors including more complex models of challenging situations and near bit sensing of hydrocarbon inflow from the surrounding formation.
- Riser gas unloading: Advancement of the fundamental understanding of the behavior of free gas volumes in a deep water riser, including improvements in modeling and testing deep water riser gas scenarios.
- Cementing/wellhead sealants: Development of novel approaches for improving and assuring sealant effectiveness.
- Integrity of abandoned wells: Increased understanding of the frequency and magnitude of leakage from abandoned wells.
- Seafloor hydrocarbon detection technology: Advancement in the detection and/or communication of hydrocarbon presence near the wellhead.
- Enhancing decision making capabilities in offshore exploration and production work environment.
 - Understanding and/or improving decision-making under adverse circumstances present in the offshore oil and gas work environment.
 - Improved sensors, instrumentation, command electronics as well as data interpretation technologies and display to aid in critical decision making during offshore oil and gas operations.
 - Improved training for critical decision making skills specific to offshore oil and gas operations.

We anticipate that successful proposals will demonstrate:

- **Fundamental understanding of systemic risk:** Research should yield information that is fundamental to improving understanding of systemic risk in the offshore oil and gas environment. As applied to reducing the risk of uncontrolled hydrocarbon release, information obtained from this research should either:
 - provide the fundamental science to improve upon a known technology, process, or procedure,
 - directly improve upon an existing technology, process, or procedure; or
 - lead to the development of a new technology, process, or procedure.

- **Understanding of the current state of knowledge:** The project team should demonstrate a clear understanding of the current state of knowledge of the issue to be addressed and the relationship of the issue to offshore drilling, production, or decommissioning activity.
- **Actionable Information toward safer operations:** Successful proposals should explain how completion of the proposed research or development will either reduce risk or increase understanding of specific risks, and how such reduction or improved understanding will lead to safer operations and a reduced chance of an uncontrolled hydrocarbon release event.
- **Offshore oil and gas stakeholder involvement:** As appropriate, projects should involve those who are directly involved with the research area of concern, whether this be the offshore development owners, the contractors, the operators, or regulatory agencies. The level of engagement depends on the nature of the project. Projects that include the appropriate offshore oil and gas stakeholder involvement are likely to produce more applicable research and/or development.
- **Scientifically valid research:** The project team should propose qualitative research that will yield data and results suitable for publication in peer-reviewed journals.