

Testimony
House Committee on Natural Resources
Innovations in Safety Since the 2010 Macondo Incident
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Good morning Chairman Bishop, Ranking Member Grijalva, and members of the committee.

My name is Holly Hopkins, I am a Senior Policy Advisor at the American Petroleum Institute, and my responsibilities include advocating for and advancing offshore safety. Following the Macondo incident, I managed two of the four Joint Industry Task Forces that were created to make recommendations to further enhance offshore safety. I am also extensively engaged in the development of API standards that promote safe and responsible development of the nation's offshore oil and natural gas resources. API has more than 625 member companies, which represent all sectors of America's oil and gas industry. Our industry supports 9.8 million American jobs and 8 percent of the U.S. economy. We appreciate the opportunity to participate in today's hearing.

I'd like to take a moment to remember the 11 workers who lost their lives on April 20, 2010, as well as their families. These husbands, fathers, sons and brothers are a reminder that we must continue to improve safety in our industry. While the industry is committed to a goal of zero fatalities, zero injuries and zero incidents, our industry takes any safety or environmental incident as a call to learn and to improve technology, training, operational procedures, and industry standards and best practices.

Immediately after the Macondo incident in the Gulf of Mexico (GOM), the U.S. oil and natural gas industry (Industry) launched a comprehensive review of offshore safety to identify potential improvements in spill prevention and intervention and response capabilities. Four Joint Industry Task Forces (JITFs) were assembled to focus on critical areas of GOM offshore activity: the Joint Industry Offshore Operating Procedures Task Force (Procedures JITF), the Joint Industry Offshore Equipment Task Force (Equipment JITF), the Joint Industry Subsea Well Control

and Containment Task Force (Subsea JITF), and the Joint Industry Oil Spill Preparedness and Response Task Force (OSPR JITF). Teams were composed of industry expert members of the American Petroleum Institute (API), International Association of Drilling Contractors (IADC), Independent Petroleum Association of America (IPAA), National Ocean Industries Association (NOIA), and the United States Oil and Gas Association (USOGA). Sessions began in early spring of 2010 to provide recommendations to the U.S. Department of the Interior (DOI) in the areas of prevention, intervention and oil spill response. The JITFs were not involved in the review of the incident; rather they brought together Industry experts to identify best practices in offshore drilling operations and oil spill response, with the definitive aim of enhancing safety and environmental protection. The Procedures, Equipment, and Subsea JITFs, as they are called, all issued final reports in March of 2012 while the OSPR JITF released a progress report in November of 2011 and has projects lasting into 2015. The ultimate goal for these JITFs is to improve Industry drilling standards to form comprehensive safe drilling operations, well containment and intervention capability, and oil spill response capability; not only through evaluation and revision of Industry guidelines and procedures, but also active engagement with regulatory processes.

The JITFs worked with trade associations, DOI's Bureau of Safety and Environmental Enforcement (BSEE) and Bureau of Ocean Energy Management (BOEM), U.S. Coast Guard (USCG), U.S. Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), National Response Team (NRT), the independent presidential commission (National Commission on the *Deepwater Horizon* Oil Spill and Offshore Drilling), the Chemical Safety Board (CSB), the National Academy of Engineering (NAE), members of Congress, and others as they considered the Macondo incident and potential changes in Industry regulation.

SUMMARY OF JITFs

Joint Industry Offshore Operating Procedures Task Force

The Procedures JITF reviewed critical processes associated with drilling and completing deepwater wells to identify gaps between existing practices and regulations and Industry best practices. Their recommendations focused on the following five areas: cementing; loads and resistance; fluid displacement and negative testing; abandonment and barriers; and safety case. Their

recommendations were intended to move Industry standards to a higher level of safety and operational performance and resulted in either revision or new development of API guidelines, which are considered Industry best practices for global oil and gas operations.

Joint Industry Offshore Equipment Taskforce

The Equipment JITF reviewed current BOP equipment designs, testing protocols and documentation. Their recommendations were designed to close any gaps or capture improvements in these areas and focused on: safety case regime; a robust management of change (MOC) process; accessing shear data; remotely operated vehicle (ROV) interface; and acoustic reliability. After submitting its recommendations, the Equipment JITF formed three subgroups to evaluate information regarding BOP shearing capabilities, BOP acoustics systems, and BOP/ROV interface. These subgroups each produced white papers regarding their topics in January of 2011.

Joint Industry Subsea Well Control and Containment Task Force

The Subsea JITF reviewed technologies and practices for controlling the release of oil from the source of a subsea well where there has been a loss of control. These include equipment designs, testing protocols, research and development (R&D), regulations and documentation to determine if enhancements were needed. The JITF identified five key areas of focus for GOM deepwater operations:

- Well containment at the seafloor;
- Intervention and containment within the subsea well;
- Subsea collection and surface processing and storage;
- Continuing R&D; and
- Relief wells.

The Subsea JITF focused primarily on potential operational scenarios after a well blowout has occurred. Consideration was also given to containment of hydrocarbons that may leak from subsea production system equipment (e.g. subsea production well) and casing stubs at the seafloor. The task force did not review blowout preventers (BOPs), Emergency Disconnect Systems (EDS), autoshear systems, deadman systems, or ROV/BOP interfaces (pumps and hot stab). These items were reviewed under the Equipment JITF.

The Subsea JITF developed 29 recommendations on specific steps to enhance the Industry's subsea control and containment capability, including 15 immediate action items.

One of the first recommendations implemented was to provide near-term response capability for well containment. This was achieved through the establishment of collaborative containment companies such as Marine Well Containment Company (MWCC) and HWCG, LLC founded in 2010 to provide containment technology and response for the unique challenges of capping a well. These companies develop and operate quickly deployed systems that are able to stem the uncontrolled flow from a well either by sealing it or directing it into storage vessels on the surface. More information on these companies can be found at <http://www.marinewellcontainment.com> and <http://www.hwcg.org>.

Joint Industry Oil Spill Preparedness and Response Task Force

<http://oilspillprevention.org/oil-spill-research-and-development-cente>

The OSPR JITF was formed to review the industry's ability and capacity to respond to an oil spill of national significance. The task force addressed both the preparedness for response and the actual response to crude oil or related oil products after they have escaped containment during Exploration & Production activities and entered into the surrounding environments (e.g. sub-sea, surface, shoreline, etc.).

Following the September 3, 2010, OSPR JITF preliminary recommendations report, the API Oil Spill Preparedness and Response Subcommittee (OSPRS) convened to address the recommendations made by the JITF. The OSPRS was tasked with leading Industry efforts to develop and implement plans that addressed the report recommendations while staying abreast of related initiatives. The OSPRS has maintained and enhanced collaboration with international organizations (e.g., International Association of Oil and Gas Producers-Global Industry Response Group (IOGP-GIRG) and the Arctic Response Technology Joint Industry Program (JIP)), well containment companies, Oil Spill Response Organizations (OSROs), and academic institutions such as Coastal Response Research Center (CRRS) and the Gulf of Mexico Research Initiative (GOMRI). The subcommittee also reviewed and commented on emerging materials related to oil spill response, such as the Presidential Commission

Findings, Incident Specific Preparedness Review, draft NRT subsea dispersant guidance, BOEM/BSEE planning guidance, and a number of scientific reports (e.g., Operational Science Advisory Team Report).

The OSPRS spent several months developing and prioritizing project plans to address each preliminary recommendation, and subsequently received approval and Industry funding commitment for a multi-year work program. The OSPRS divided the recommendations into seven categories, or work streams, as outlined in the original report, specifically:

- Planning
- Dispersants
- Shoreline Protection and Cleanup
- Oil Sensing and Tracking
- In-Situ Burning
- Mechanical Recovery
- Alternative Technologies

Within each category there are a number of projects being worked by individual project teams. These individual project teams are led by a member of the OSPRS. The teams have developed scoping documents and project plans complete with milestones and are in the process of implementation. In some cases projects have endorsed budgets for one or more years to allow access to contractors/consultants or other support services to complete studies, research, workshops, etc.

These projects envision collaboration among Industry, government, and academia. Some project teams will carry out large-scale research studies while other teams will assume a monitoring and engagement role if similar initiatives are being conducted by other entities (such as the Federal government).

API and the oil and natural gas industry have established a robust oil spill response research and development program that oversees more than 25 projects in the eight areas previously outlined (planning, mechanical recovery, dispersants, in situ burning, remote sensing, shoreline protection, alternative technologies). While a great deal of attention continues to be given to offshore incidents, further focus is also being directed towards near-shore and inland spill

response, and industry continues to engage with Federal stakeholders, science and the academic community on these areas of focus.

Based on the assessment conducted immediately after the Macondo incident, a number of publically available reports and guidance documents have also been created, including:

- Spill Response Planning:
 - API Training and Exercise Guidelines
 - Guidelines for Offshore Oil Spill Response Plans
 - Personal Protective Equipment Selection for Oil Spill Responders
 - Net Environmental Benefit Analysis (NEBA) Graphical Briefing
- Oil Sensing & Tracking
- Remote Sensing Planning Guidance
- Dispersants:
 - Dispersants Fact Sheet 1 - Introduction to Dispersants
 - Dispersants Fact Sheet 2 - Dispersants and Human Health and Safety
 - Dispersants Fact Sheet 3 - Fate of Oil and Weathering
 - Dispersants Fact Sheet 4 - Toxicity and Dispersants
 - Dispersants Fact Sheet 5 - Dispersant Use Approvals in the United States
 - Dispersants Fact Sheet 6 - Trade Offs
 - Dispersants Fact Sheet 7 - Aerial Vessel
 - Dispersants Fact Sheet 8 – Subsea and Point Source Dispersant Operations
 - Dispersant Fact Sheet 9 – Dispersant Use & Regulation Timeline
 - Dispersant Fact Sheet 10 – Dispersant Use in the Arctic Environment
 - Industry Recommended Subsea Dispersant Monitoring Plans
 - API JITF Subsea Dispersants Injection Newsletters
 - The Role of Dispersants in Oil Spill Response
 - SINTEF Dispersants Effectiveness Report – Phase I
- In-Situ Burning
- Mechanical Recovery
- Deepwater Horizon Mechanical Recovery System Evaluation Technical Report 1143
- Shoreline Protection:
 - Oil Spills in Marshes
 - Subsurface Oil Detection Report

- Subsurface Oil Detection Field Guide
- Subsurface Oil Detection and Delineation in Shoreline Sediments Phase 2 — Final Report
- Shoreline Protection on Sand Beaches (aka Berms and Barriers) Report
- Shoreline Protection on Sand Beaches (aka Berms and Barriers) Guide
- Mechanized Cleanup of Sand Beaches Report
- Tidal Inlet Protection Strategies (TIPS) Report
- Biodegradation & Bioremediation on Sand Beaches Report
- Alternative Response Technologies
- Evaluation of Alternative Response Technology Evaluation (ARTES) Technical Report 1142
- Educational Media: Dispersants Role in Biodegradation Video; Net Environmental Benefit Analysis Instructional Video; Principles of Oil Spill Prevention and Response Instructional Video
- Spill Prevention YouTube Channel
- OilSpillPrevention.org Website
- Guidance on the creation of offshore oil spill response plans
- An evaluation of the mechanical recovery systems used at sea during the Macondo incident
- A report (and associated field guide) for spills on sand beaches and shoreline sediments, including protection techniques and detection and response capabilities
- An evaluation of the process by which alternative technologies are reviewed for use during an oil spill

The industry has also invested in two international oil spill preparedness and response programs focused on improving industry operational capabilities in all parts of the world including the Arctic. These two programs are coordinated with API's activities, and together, they represent a comprehensive, global approach to continued advancements in oil spill preparedness and response. A newsletter providing periodic updates on these activities can be found at <http://www.api.org/environment-health-and-safety/clean-water/oil-spill-prevention-and-response/api-jitf-subsea-dispersant-injection-newsletter>

The full suite of industry reports and recommendations are available at <http://www.api.org/oil-and-natural-gas-overview/exploration-and-production/offshore/api-joint-industry-task-force-reports>.

PREVENTION: INDUSTRY STANDARDS

Reviewing and improving industry standards has always been a top priority. Since 1924, API has been the leader in developing industry standards that promote reliability and safety through the use of proven engineering practices. The API standards process is accredited by the American National Standards Institute (ANSI), which is the standards authority here in the United States and accredits similar programs at several national laboratories. As part of API's accredited process all API standards are reviewed on a regular basis to ensure they remain current. API standards are developed in an open and transparent process which includes subject matter experts from Academia, Government and Industry and are the most widely cited oil industry standards by Federal, State, and International Regulators.

API has 224 exploration and production standards that address offshore operations, covering everything from blowout preventers to comprehensive guidelines for offshore safety programs, and more than 100 have been incorporated into federal regulation. Since 2010 API has published over 100 new and revised exploration and production standards; key standards include the following:

New Documents:

- RP 96, *Deepwater Well Design and Construction*, 1st Edition, March 2013
In June 2010, an API work team held a kick-off meeting to outline initial content for the new API RP 96. This document provides well design and operational considerations to safely design and construct deepwater wells with maximum reliability. There was coordination with the Subsea JITF and the API Standard 53 workgroup to ensure their recommendations were addressed in the document as well.
- Bulletin 97, *Well Construction Interface Guidelines*, 1st Edition, April 2011
In July 2010, the Procedures JITF held a kick-off meeting to outline initial content for Bulletin 97. Bulletin 97 provides guidance on information that is to be shared regarding well construction and rig-specific operating guidelines. It is intended to align the lease operator's safety and environmental management system (SEMS) with drilling

contractor's safe work practices (CSWP). The WCID-SEMS is a bridging document that includes the elements identified in API 75 within the context of well construction activities. It is understood that work processes vary between operators and contractors, which should be honored in the development of the WCID document.

- Specification Q2, Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries, 1st Edition, December 2011
- RP 17W, Subsea Capping Stacks, 1st Edition, July 2014
In August 2011 a workgroup was formed to create a new document on subsea capping stack recommended practices for design, manufacture, and use. The document applies to the construction of new subsea capping stacks and can be used to improve existing subsea capping stacks. The document can aid in generating a basis of design (BOD) document as well as preservation, transportation, maintenance, testing documents, and operating instructions.
- TR 17TR8, High-temperature, High-pressure Design Guidelines, 1st Edition, February 2015
This technical report is to provide design guidelines for oil and natural gas subsea equipment utilized in high-pressure high-temperature (HPHT) environments.
- RP 17V, Recommended Practice for Analysis, Design, Installation, and Testing of Safety Systems for Subsea Applications, 1st Edition, February 2015
- RP 98, Personal Protective Equipment Selection for Oil Spill Responders, 1st Edition, August 2013
This RP was developed from a recommendation of the OSPRS and provides general information and guidance for the development of oil spill responder personal protective equipment (PPE) control measures. Although an extensive amount of information has been developed on the topic of PPE for emergency responders, this document focuses on the PPE selection process as well as its technical evaluation based on the hazards present.
- TR 1PER15K-1, Protocol for Verification and Validation of High-Pressure and High-Temperature Equipment, 1st Edition, March 2013
This report focuses on an evaluation process for HPHT equipment in the petroleum and natural gas industries which includes design verification

analysis, design validation, material selection considerations, and manufacturing process controls necessary to ensure the equipment is fit-for-service in the applicable HPHT environment.

- RP 2SIM, Structural Integrity Management of Fixed Offshore Structures, 1st Edition, June 2013

Revised documents:

- Standard 53, Blowout Prevention Equipment Systems for Drilling Wells, 4th Edition, November 2012

Based on the Equipment task force's recommendations, an API work team began development on the fourth edition of API RP 53. The purpose of the document is to provide requirements on the installation and testing of blowout prevention equipment systems on land and marine drilling rigs (barge, platform, bottom-supported, and floating). The fourth edition was updated to a Standard.

- Standard 65-2, Isolating Potential Flow Zones During Well Construction, 2nd Edition, December 2010

API Recommended Practice (RP) 65—Part 2 was first published in May 2010. API then revised the document based on 1) lessons learned from the Macondo incident; and 2) alignment with the planned Deepwater Well Design and Construction RP (discussed below). The revisions resulted in the API RP becoming API Standard 65-Part 2, second edition. The document contains best practices for zone isolation in wells to prevent annular pressure and/or flow through or past pressure-containment barriers that are installed and verified during well construction. Well construction practices that may affect barrier sealing performance are mentioned along with methods to help ensure positive effects or to minimize any negative ones.

- RP 17H, Remotely Operated Tools and Interfaces on Subsea Production Systems, 2nd Edition, November 2014

Based on recommendations from the Equipment JITF the first edition of API 17H was revised. The second edition provides recommendations for development and design of remotely operated subsea tools and interfaces on subsea production systems in order to maximize the potential of standardizing equipment and design principles.

- Specification Q1, Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry, 9th Edition, June 2013

- Specification 14A, Subsurface Safety Valve Equipment, 12th Edition, January 2015
- Specification 16C, Choke and Kill Systems, 2nd Edition, March 2015

Standards under development:

- Specification 16A, Specification for Drill-through Equipment , 4th Edition
- Standard 16AR, Repair and Remanufacture of Blowout Prevention Equipment, 1st Edition
- Specification 16D, Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment, 3rd Edition
- Specification 16F, Specification for Marine Drilling Riser Equipment, 2nd Edition
- Recommended Practice 16Q, Design, Selection, Operation and Maintenance of Marine Drilling Riser Systems, 2nd Edition
- Specification 16R, Marine Drilling Riser Couplings, 2nd Edition
- Specification 16RCD, Drill Through Equipment - Rotating Control Devices, 2nd Edition
- Recommended Practice 16ST, Coiled Tubing Well Control Equipment Systems, 2nd
- 18 Life Cycle Management, 1st Edition

Government-referenced and safety-related standards may be freely viewed online at <http://publications.api.org>.

SUMMARY

The Macondo incident was a tragedy that cost eleven lives, and as a result, was a call to action to industry to identify and develop multiple improvements in offshore equipment, operations, well design, well control equipment targeted at prevention and containment and new procedures and tools for responding to oil spills. These activities have created a model safety program in the GOM and beyond for well operations crews and the environment. Active participation from and coordination with the public sector, academia, and other stakeholders has been fundamental to turning initial recommendations into genuine plans of action and enhanced safety guidelines. As always, standards and best practices will continue to be reviewed on an ongoing basis in order to protect the environment and promote the safe and responsible development of energy sources that help fuel the American economy.

The oil and natural gas industry and the federal government have together taken great strides to protect workers and the environment and to improve the safety of offshore drilling operations. As the co-chairs of the President's spill commission said in 2014, offshore drilling is safer than it was four years ago. The industry has placed a particular focus on increasing its ability to 1) prevent spills from occurring, 2) intervene to halt any spill that does occur, and 3) respond to spills with the most effective mitigation measures possible.

The industry stands committed to safe and environmentally responsible development.