NOAA Office of Ocean Exploration Quick Look Report

Expedition Title: Lophelia II: Reefs, Rigs, and Wrecks

Results (please check all disciplines in which this cruise collected data)	Details (please describe any novel discoveries in the discipline, answers such as "possible, awaiting data analysis" and "no apparent discoveries" are acceptable)
Bathymetric Mapping x Yes ☐ No	(please note total area mapped and technology employed, e.g. multibeam, side scan, etc.) 20 km2 using ship's Seabeam multibeam system, <1 km2 highresolution multibeam (SM2K) from Jason II
New Species Discovered ☐ Yes ☐ No	(please note number, type, and significance ,i.e. radically new vs. slight adaptation of known species) Unsure at this time, awaits further taxonomic resolution
Bio-prospecting ☐ Yes x No	(please note number, type, and potential use of new compounds discovered)
Habitat Range Extended x Yes ☐ No	(please note species discovered in new habitats and how far from previous range were they found) Lophelia pertusa was confirmed from Garden Banks 535, over 100 miles further west than it has been reported in the Gulf of Mexico. One genus of gorgonian was tentatively identified, and would be a range extension of this species from its previously known distribution in the South Pacific. Additional range extensions await further taxonomic research.
Chemical Processes x Yes ☐ No	(please note new or unusual chemical properties such as methane seeps, hypersaline pools, vents, etc. observed) Push cores were obtained in coral, seep, and background areas; water samples were obtained from CTD rosette and submersible deployed Niskin bottles for determination of alkalinity and pH.
Geologic Processes x Yes ☐ No	(please note new or unusual geologic processes that may impact scientific understanding of the region) The first cold-water carbonate mounds in the Gulf of Mexico were discovered.
Physical Processes x Yes ☐ No	(please note new or unusual oceanographic processes that may impact scientific understanding of the region) Elevated alkalinity was detected over one of the newly discovered Lophelia pertusa reefs. The mechanism generating this local phenomenon is still unknown.
Sub/ROV/AUV Dives x Yes ☐ No	(please note name, type, and cumulative hours of bottom time for each platform / if available please provide average working time per dive for each platform / please note if new depth records were set) A total of 22 lowerings of the ROV Jason II were completed. Two of these were aborted prematurely due to technical issues (including one resulting from a jellyfish hitting the down-looking still camera upon launch). A total of 356 hours of bottom time, or approximately 18 hours per full-length dive, were completed.
New Technology ☐ Yes x No	(please note any new tools developed for or during this cruise, also identify first use of an existing technology in a new application) There was no new technology developed for this cruise. However, new configurations of the long-term camera deployment and the in situ hand-held macro camera were used very successfully.
Maritime Cultural Heritage x Yes ☐ No	(please note discoveries impacting knowledge of the past, i.e. number and type of shipwrecks) Five shipwrecks were investigated ranging from 19th century to mid-20th century. We were able to more closely date the wrecks and understand their cultural significance, and developed a better understanding of the trade and commerce networks of the Gulf of Mexico.
Outreach x Yes ☐ No	(please describe outreach channels, e.g. Web, port call, etc., used in this project) First, the cruise was covered as a "Signature Expedition" on the NOAA Ocean Explorer web site. Liz Goehring was our education and outreach coordinator for the first leg and developed ideas for new lesson plans related to deep-sea coral to be used in the near future. On the second leg, Sheli Smith was the E&O coordinator for the second leg and arranged for seven High School engineering classes to follow the expedition to study ROV construction techniques.
Students Involved x Yes ☐ No	(please note the number and level of students on the expedition) There were a total of 7 graduate students (including an exchange of students between IFREMER in France and Penn State) and 2 undergraduate students on the cruise.
Multidisciplinary x Yes ☐ No	(please identify the formal disciplines represented in the science party) Biology, Ecology, Genetics, Geology, Geography, Geophysics, Archaeology, Education and Outreach,
Exploration of New Regions x Yes ☐ No	(please note if the area of operations had been previously studied, if so please check no and approximate as slight, moderate or significant, the level of knowledge before the cruise) Of the 17 different sites visited, 10 had never been dove on before. We had multibeam maps for all but 2 of the sites, but obtained these during the cruise. Of the 7 sites that had been previously visited, we explored new areas of each of the sites, including finding a large coral reef on an edge of our primary site, VK826, that had not been previously known.

Ocean Exploration Quick Look Report Required Elements

The Office of Ocean Exploration (OE) does not require a specific Quick Look Report format. Reports submitted under other requirements (e.g. Cruise Summary Report (CSR)) or Fisheries-Oceanography Coordinated Investigations (FOCI)) are acceptable. In all cases Quick Look Reports submitted to OE should contain the following elements:

Project title: (as listed in original proposal)

Principal Investigator and institution: (as listed in original proposal)

Expedition title: (working name of the expedition)

Expedition dates and itinerary: (a simple table is sufficient)

Chief Scientist and institution:

Co-sponsors / partners / participating organizations: (a table of names and affiliations)

Vessel Identification: (if applicable)

Primary Equipment: (embarked vehicles, sensors, and tools of significance)

Geographic area of operations (identify common name such as Northwestern Hawaiian Islands as well as boundary coordinates for the area, and a map if available)

Summary of Expedition Objectives: (a list of the proposed objectives that were met as a result of the expedition)

Milestones Achieved: (This section of the report should amplify the information provided in the official OE cover sheet summary of results. This section should elaborate on key findings)

Sample log entries: (from any daily logs of activities that were kept)

Summary of Digital Data Collected: (Identify volume in MB/GB/TB etc. and type of data collected. Be as explicit as possible, e.g. identify high definition video as opposed to simply video.)

Summary of outreach and educational activities: (a summary discussion of the nature and success of the activities, i.e., number and types of displays and participants in the case of an open-house event)

Thoughts for the Future: (a discussion of any ideas for future exploration, research, or management activities related to the work accomplished)

Summary of Expedition Operations (A good summary would identify as many of the following elements as possible for each "operation." Table formats are ideal for this aspect of the report: data type collected / time / position / ID tag /operation type /dive tracklines / depth /comments)