

The SPOT Project (Potentially Triggerable Offshore Seismicity and Tsunamis): a First Appraisal of the Possible Impact of Oil and Gas Platforms on the Seismic and Tsunami Risks along the Italian Coasts

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ABSTRACT

The majority of oil and gas production in Europe takes place offshore and Italy is one of the European countries with the longest coastlines facing these operations. Given the generally growing energy demand, and the increasing concern toward human-driven hazards, scientists are called to provide background information for helping ensure a safe energy supply. We here present the activities of the project SPOT, which is aimed to help Italian authorities comply with the application of the Safety of Offshore Oil and Gas Operations European Directive (2013/30/EU) and the ensuing Italian codes. We carry out a reconstruction of offshore geological structures to assess the existence of potentially seismogenic faults in the surroundings of off-shore platforms. This study is a propaedeutic step for the assessment of potentially triggered seismicity connected with operations on such platforms. The descriptive parameters (3D geometry and behavior) of the identified faults will be used to estimate their natural earthquake rates. The impact of these natural earthquakes along the coasts will then be modeled in terms of expected ground shaking and tsunamis. The tsunamis potentially generated by submarine landslides induced by earthquake shaking will also be analyzed. In turn, these models will be used to estimate potential human and economic losses in a multi-hazard approach to risk assessment. Wherever the combined earthquake and tsunami modeling indicates a relevant impact along the coasts, a more detailed analysis will be carried out, also involving the operators of the related platforms, to perform specific models which also take into account production and/or storage data. Activities with a consolidated background, such as those concerning the impact scenarios of earthquakes, and more innovative activities, such as those dedicated to build up the first vulnerability/fragility curves related to tsunamis for the Italian building stock, will be integrated within the project. The details of the project workflow, along with the preliminary results of the first leg of activities will be presented. The SPOT project has been conceived and funded by the Italian Ministry of Economic Development, with the technical support of the National Department of Civil Protection, following auspices of the Italian Major Risk Commission.