



ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

The Galveston District requested ERDC perform a review of the technical requirements of the district pipeline policy, provide a potential failure mode analysis of pipelines impacted by dredging operations including cutter head and spud impacts, and recommend a defensible offset.

Period of Performance:

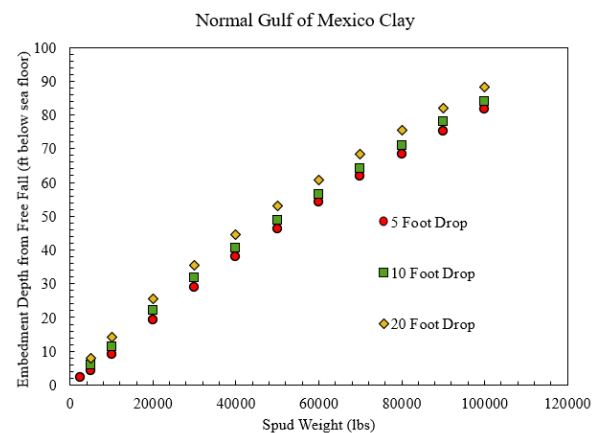
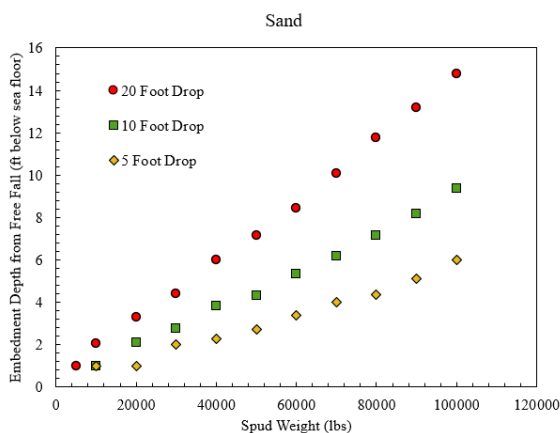
7/9/21-8/8/21

Benefits of the Response to the USACE Dredging/Navigation Program:

The findings presented to Galveston District will provide the district information on other USACE District pipeline policies, cause and frequency of past pipeline/vessel strikes, and theoretical calculations for dredge spud penetrations depths. This information can be used to defend existing policy or utilized to update policy requirements. The findings in this request can also be utilized by other USACE Districts to help inform their policy requirements.

Deliverable:

ERDC approached this request from a few different angles. The first was to review the Galveston District (SWG) pipeline policy in relation to the Code of Federal Regulations (CFR) and other regional USACE District's pipeline policy. This review showed a wide range of minimum coverage and horizontal offset distances for pipelines under navigable channels. SWG was not the most restrictive district surveyed. A review of past pipeline/vessel incidents showed most incidents being caused by dredge spuds and not the cutterhead or degradation of the channel. Depths of cover in those incidents ranged from 3 - 7.5 ft over the pipeline. ERDC researchers spoke with dredging industry representatives, shipping industry representatives, as well as a USACE dredge captain in-regards to dredging operations around pipelines, assumed spud/anchor penetration depths, and current fleet spud dimensions. The industry provided spud sizes ranged from 11K-180K pounds and were utilized for calculations on spud penetration depth. These calculations were performed for several different sized spuds, each at varying drop heights and soil types (shown below). The calculated penetration depths were in line with many of the verbal estimates on spud penetrations received from industry. CHL has presented all of these findings to the Galveston District in the form of a power point presentation (attached), to allow SWG the ability to review the findings, and defend/alter their pipeline policy as needed.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers Operations and Maintenance navigation and dredging missions

