Optimization Tools for Navigation - OTN (2013)

Status: In Progress

Project Manager: Mark Pointon

Purpose: Provides support to civil works navigation programs through development of methods, procedures, and computerized applications to support decision-making process for justification and optimized formulation of new waterway improvements review/prioritization of programs and budget development and justification for ongoing waterway project operations and maintenance (O&M).

Objective: Development of computerized applications for evaluation of general vessel response to bar and interior channel conditions to aid in design specifications for depth (CADET);

Investigations for vessel movement in confined waterways (VNCW)

Development of a computerized application to support HQUSACE evaluation and prioritization of budgetary allocations for deep-draft navigation project operation and maintenance (NOMPEAS; navigation operation & maintenance performance evaluation & assessment system)

Benefits: IWR is conducting a vessel hull modeling activity jointly with ERDC & the U.S. Naval Academy (USNA) that with further development of the CADET (Channel Analysis Design Evaluation Tool) computerized program will render advanced technologies for methods of analysis & compilation of new physical & numerically-generated data sets descriptive of vessel movement & response within confined waterways. Resulting datasets & analytical procedures will in turn be practically applied to more accurately determine channel dimension requirements associated with evolving or foreseeable vessel designs. This vessel hull modeling effort will also generate essential data on hull designs, vessel dynamics & channel configuration in order to optimize and minimize ongoing & future maintenance dredging requirements.

The NNOMPEAS component will use domestic & foreign trade data to determine & analyze the loaded drafts of vessels of all recorded vessel calls for individual harbors and channels & will provide for estimation of transportation cost benefits foregone with reduction or absence of maintenance and will offer the potential to optimize maintenance dredging requirements for individual channel reaches & across much of the overall USACE dredging program.

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