historical data sets all contribute to the success of other CO-OPS programs including the Physical Oceanographic Real-Time System (PORTS)®.

With maritime activity expected to triple in the next 20 years there will be an increased demand for updated information. Technology improvements have produced modern instrumentation for measuring water velocity with increased range, accuracy and deployment duration. NCOP deploys current meters with acoustic Doppler technology to profile the vertical water column at a specific location. These meters are deployed in self contained mode with internal memory and batteries. NCOP is investigating the use of High-Frequency Radar to provide tidal current predictions and new products for surface currents to the mariner. As technological capabilities advance, current observations will become more readily available in real-time and will also be assimilated into hydrodynamic models, providing better predictions for the commerce, recreation and HAZMAT communities.

Photo courtesy of the U.S. Coast Guard

NCOP tidal current predictions assist forecasters calculating the rate and extent of oil dispersion. This information is vital to clean-up crews trying to mitigate the impact of HAZMAT incidents.

Since the 1840s when the US Coast and Geodetic Survey first published tidal current predictions in US Coast Pilot mariners and scientists have relied on accurate tidal current information for many purposes including:

- planning safe navigation routes
- optimizing port operations
- responding to hazardous material (HAZMAT) incidents
- supporting hydrodynamic nowcast/forecast models
- assisting with effective coastal planning and management
- researching oceanographic and estuarine dynamics

Center for Operational Oceanographic Products and Services (CO-OPS)

National Current Observation Program (NCOP)

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CO-OPS is a center of expertise whose mission is the collection, analysis, and dissemination of integrated oceanographic information to protect life, property, and the environment.

National Current Observation Program (NCOP)

www.tidesandcurrents.noaa.gov

"Accurate tidal information is absolutely critical for planning vessel transits. Maneuvering large commercial ships requires reliable tide and current predictions to ensure both vessel and environmental safety. NOAA's National Current Program's recently completed current study of the Hudson River has been an invaluable tool for us to provide safe pilotage and protect one of America's most scenic rivers."

- Capt. R. Scott Ireland
Hudson River Pilots Association

Since the mid-1800s, NOAA and its predecessor agencies have collected and analyzed information on tides and currents in the nation's waterways and used this information to support safe navigation, more efficient maritime commerce, and more recently, to enhance environmental stewardship. Today, the NOAA Center for Operational Oceanographic Products and Services (CO-OPS) manages the National Current Observation Program (NCOP) to continue meeting this important mission need.

Tidal current predictions provide vessel captains with data to help navigate in changing tidal conditions, no matter the size of the vessel nor the cargo they carry.

NCOP collects, analyzes, and disseminates observations and predictions of tidal currents for over 2,700 locations throughout the United States. Vessels rely on accurate tidal current predictions to transport their cargo safely to port. In fact, the United States Coast Guard requires NOAA's tidal current prediction tables be carried by large commercial vessels, along with nautical charts and tide tables, so mariners can navigate safely.

Channel dredging, storms, changes in watershed hydrology and sediment loading, and coastal development can significantly alter the physical geography of our nation's ports and waterways, resulting in potential modifications to tidal flow and circulatory patterns. Such variations may impact the existing tidal current predictions. NCOP puts a priority on updating predictions in these regions, as well as updating predictions that are based on data collected with older equipment that may not have enabled the most accurate predictions to be provided. NCOP also considers factors such as volume and type of cargo moved, strength of tidal currents, and user requests to prioritize survey areas. Recent major surveys have been conducted in Alaskan waters and in San Francisco, Delaware, Humboldt and Chesapeake Bays. Over the next 10 years, NCOP will update over 700 stations at numerous locations in the Tidal Current Tables. NCOP's operational expertise, knowledge of current dynamics, and

Ship departures or arrivals are dependent upon times of optimal current conditions.