

## Hydrographic Survey Cost Comparison – Methods and Procedures

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In 2001, NOAA's Office of Coast Survey (OCS) undertook a study to obtain overall cost estimates for acquiring hydrographic data. The goal of the analysis was to help determine the most efficient use of survey resources considering three approaches to conducting hydrographic surveys, and taking into account the differing characteristics of the survey areas. Estimates for NOAA and contracted surveys were derived from specific survey projects conducted over the period from FY 1996 through FY 2000. The analysis, performed by KPMG Consulting, also included cost estimates for a time charter approach, but these estimates were based on market surveys rather than historical cost data.

With nearly four years of additional data available for both NOAA-conducted and contractor-conducted surveys, and the first year of operations for one type of time charter model nearly complete, OCS plans to update the cost analysis as an aid in efficiently applying future resources to the acquisition of hydrographic survey data. The reporting unit will be cost per square nautical mile of hydrography and will include all direct and indirect costs.

### Approach

A critical component of the cost comparison process is to ensure that similar types of surveys in similar areas are compared. If the number, size and location of hydrographic surveys done by in-house NOAA resources were identical to those completed by contractors, this partitioning would not be necessary. However, the cost of surveys varies greatly due to (1) location (Alaska is much more costly due to remoteness from support facilities for fuel/supplies and harshness of weather), (2) water depth (shallow areas are typically more time consuming and costly for multibeam and side scan sonar surveys because line-spacing must be decreased to ensure complete coverage of the seafloor), (3) complexity (flat featureless areas such as the Gulf of Mexico are significantly less time consuming and less expensive to survey than areas with rugged seafloor topography such as most of Alaska and the northeastern U.S.) and, to a lesser extent (4) methodology used (more area can usually be covered by a side scan sonar than a multibeam sonar in the same amount of time).

In preparation for the updated cost comparison, all surveys conducted for NOAA,

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both in-house and by contractor/time charter, between 1998 and 2005 will be placed in categories based primarily on location and, if applicable, by water depth. The preliminary listing of those categories is as follows:

1. Atlantic coast north of Long Island (generally rugged rocky coast and seafloor)
2. Atlantic coast south of Long Island (generally sandy gently sloping seafloor)
3. Gulf of Mexico (generally sandy gently sloping seafloor)
4. West Coast
5. Southeast Alaska (generally steep/deep seafloor with somewhat protected waters)
6. Southeast Alaska – offshore (deep with little or no shoreline)
7. South Central Alaska (generally rugged rocky coast and seafloor, shallower than Southeast Alaska, less protected and more remote)
8. Cook Inlet, Alaska (relatively shallow muddy bottom with high currents)
9. Southern Alaska shallow (generally rugged rocky coast and seafloor with little protection from the open ocean – depths less than 30 meters)
10. Southern Alaska deep (generally rugged rocky coast and seafloor with very little protection from the open ocean – depths greater than 30 meters)

Following categorization of all surveys, multiple samples will be selected in each category from both NOAA and contractor surveys for more detailed analysis. This analysis will include the number of Automated Wreck and Obstruction Information System (AWOIS) items assigned to the survey, the number of Dangers to Navigation submitted, the number of significant side scan sonar contacts identified as features in the data, and the number of shoreline features verified. There are no plans to analyze all surveys from 1998-2005 at this level of detail due to the anticipated time and human resources required for such an effort. A representative sampling should achieve accurate results.

The final report from this cost analysis will include cost comparisons between contractor and NOAA surveys in as many of the above ten geographic areas as the data permits.

The reporting unit will be cost per square nautical mile of hydrography and will include data processing necessary to produce a final “smooth sheet” which is an archivable graphic and digital record of the survey.

For NOAA surveys, costs will include all direct and indirect costs such as, but not limited to, operating expenses (fuel, salaries, travel, consumables, and others),

vessel and capital equipment depreciation costs, and costs associated with Government employee retirement and benefits.

For contractor surveys, all Government costs associated with initiating and monitoring the contract, as well as any Government data processing costs to produce the final smooth sheet will be included. For example, the salary and all associated benefits of the government Contracting Officer's Technical Representative (COTR) will also be included as well as periodic travel to the contracting company's vessel or home office.

For time charter surveys, all Government costs associated with initiating and monitoring the contract, as well as any Government data processing costs to produce the final smooth sheet will be included. This will include costs associated with the Military Sealift Command which administers the time charter contract. In addition costs will be included for Government employees who will be deployed aboard the chartered vessels to provide hydrographic expertise and oversight (i.e., daily planning, project management, quality assurance, etc.). Variations of the current time charter model will be analyzed to determine the cost-effectiveness of at least two alternatives: (1) the vessel, crew, all survey equipment and equipment operators are provided as part of the vessel time charter contract; (2) the vessel, crew, and all survey equipment are provided as part of the vessel time charter contract, but services of the equipment operators are obtained through a separate contract using Brooks Act procurement methods.

#### Methodology

Since the estimates will include the costs of government operations, commercial operations, and a mixture of the two (i.e., time charter) it is important that similar accounting methods are employed. For example, the NOAA support costs must include all appropriate factors (personnel benefits such as retirement and insurance costs, depreciation costs of vessels and major equipment, etc.). OMB Circular A-76 will be used for guidance on cost accounting principles for identifying cost factors that should be included in developing Government cost estimates. (The Circular is available on the internet at <http://www.whitehouse.gov/omb/circulars/index.html>.)

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Some of the cost factors from A-76 and elsewhere that are to be used are as follows:

1. The “cost” of Government employees will include annual salaries plus cost factors for retirement, insurance and health benefits, Medicare, leave surcharge, NOAA overhead, and GSA rent. There are special calculations for uniformed personnel that include, among other things, the Future Retired Pay of Commissioned Officers.
2. Casualty insurance will be computed on all major Government assets, even though there is no expenditure of funds for such insurance. This “increase” in Government cost is intended to offset the cost of insurance needed by contractors.
3. Personal liability insurance will be computed on the Government’s total personnel-related costs.
4. No “conversion costs”, as described in A-76, will be included since these costs are associated with converting to/from in-house performance of an activity.
5. Contract administration costs will be added to all contractor activities.
6. Federal Income Tax Adjustment - Contractor costs will be reduced in accordance with A-76 (Attachment C, Section C, paragraph 6) to account for the potential Federal income tax revenue generated by the contract award.
7. Costs associated with NOAA vessel operations will include vessel labor and benefits, marine center labor and benefits, travel and per diem, fuel, supplies, maintenance and repair and other overhead associated with NOAA’s Office of Marine and Aviation Operations.
8. Ship and equipment depreciations will be added to the Government cost, even if they have exceeded the useful life usually used to calculate depreciation. As before, there is no real expenditure of funds for this depreciation. This “increase” in Government cost is intended to offset the cost of capital equipment by contractors.
9. All costs will be adjusted to 2005 costs to provide a common basis for comparison.
10. The analysis will include all support costs associated with conducting surveys under each scenario, including planning, source evaluation boards, contracting, tide analysis, supplies and final data processing.

The cost of contracted surveys will be determined from the task orders, to which will be added the appropriate cost factors from A-76 and other guidance including NOAA’s cost to implement and support the contract. NOAA’s cost for in-house surveys is more complicated as vessels are funded for an entire year. The proposed methodology for field data acquisition is to divide all annual costs associated with a vessel operation by the number of sea days (days away from

port) to determine an estimated cost per sea day. The number of days on a survey or project will be determined/estimated and multiplied by the daily rate to obtain the basic cost for that survey/project. The basic costs for both contractor and in-house surveys will adjusted in accordance with the A-76 accounting principles to produce the same quality assured end product.