

COST OF HYDROGRAPHY

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The following statistics are based on a study of the cost of hydrographic work accomplished since 1920. They are given for the larger survey units only. Lack of cost data prevents the inclusion of a considerable number of projects.

In determining the unit cost of hydrographic work involving a wide range in the spacing of sounding lines, it is apparent that the unit "cost per square mile" cannot be used. The unit should be based on the intensity of the work, that is, either "soundings per square mile" or "miles per square mile". The former could possibly have been used before the advent of echo sounding, but with that method available, the cost of "soundings per square mile" will depend largely on how many soundings one cares to record. Consequently, the unit "cost of miles per square mile", or what amounts to the same thing "cost per mile", has been used.

Intensity of sounding (*I*) = miles per square mile = average spacing of sounding lines in "lines to the mile".

$$\text{Unit cost} = \frac{C}{I} = \frac{\text{cost per square mile}}{\text{miles per square mile}} = \text{cost per mile.}$$

I. PROJECTS PRIOR TO USE OF R. A. R. AND ECHO SOUNDING (includes all other methods).

<i>Vessel.</i>	<i>Localities.</i>	<i>Miles based on</i>	<i>Unit Cost.</i>
<i>Surveyor</i>	S. E. & S. W. Alaska	20736	\$ 11.74
<i>Guide</i>	U. S. (Pacific)	16662	11.90
<i>Hydrographer</i>	U. S. (Gulf of Mexico)	16816	12.02
<i>Natoma</i>	U. S. (Pacific)	4250	12.28
<i>Explorer</i>	S. E. Alaska	3050	13.74
<i>Pioneer</i>	U. S. (Pacific) & Alaska.....	17379	14.27
<i>Discoverer</i>	U. S. (Pacific), Alaska & T. H.	9336	17.63
<i>Bache</i>	U. S. (Atlantic and Gulf)	16506	18.53
<i>Ranger</i>	U. S. (Gulf) and Virgin Islands.	6882	20.22
<i>Lydonia</i>	U. S. (Atlantic, Pacific) and Alaska...	23875	24.11
Mean (weighted) of entire fleet =		\$ 16.02.	

II. PROJECTS SINCE USE OF R. A. R. AND ECHO SOUNDING (includes all methods).

<i>Vessel.</i>	<i>Localities.</i>	<i>Miles based on</i>	<i>Unit Cost.</i>
<i>Pioneer</i>	U. S. (Pacific) & T. H.	30905	\$ 5.96
<i>Discoverer</i>	U. S. (Pacific)	7814	6.65
<i>Surveyor</i>	S. W. Alaska	3142	7.43
<i>Guide</i>	U. S. (Pacific) and T. H.	8603	8.22
<i>Natoma</i>	U. S. (Atlantic).....	4671	8.91
<i>Lydonia</i>	U. S. (Atlantic).....	3988	13.72
<i>Ranger</i>	U. S. (Atlantic).....	2309	13.73
<i>Oceanographer</i>	U. S. (Atlantic and Gulf)	6543	17.82
Mean (weighted) of entire fleet =		\$ 8.45.	

Reduction in cost since development of echo sounding and R. A. R. :

$$\frac{16.02 - 8.45}{16.02} = 47 \%$$

III. LOCALITIES.

	UNIT COST.	
	<i>Before echo sounding.</i>	<i>Since echo sounding.</i>
S. W. Alaska.....	\$ 19.24	\$ 7.43
S. E. Alaska.....	12.99	—
U. S. (Pacific).....	14.81	7.77
U. S. (Atlantic).....	19.03	13.25
U. S. (Gulf).....	16.53	—
Hawaiian Islands	16.48	5.19
West Indies.....	12.43	—
Mean (weighted)	16.02	8.45

Notes and Explanations :

1. The unit cost given under the *Oceanographer* includes the *Lydonia* on their combined project on Georges Bank, 1930.
2. The relatively high cost of hydrography on the Atlantic Coast is due partially to the more expensive control required but largely to the fact that a greater percentage of the areas must be sounded at reduced speeds than is necessary on the other coasts.
3. The comparatively low cost of hydrography in the Hawaiian Islands since the advent of echo sounding is partially due to the fact that the projects on which it is based include sounding lines to and from the working ground which have averaged several hundred miles from the base of operations.

