NOAA Ship THOMAS JEFFERSON Procedure Document

Procedure:

Line Spacing 101

Creation Date:

07-18-2020

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Software used: NA

Procedure Number:

TBD

Approved:

TBD

1. Overview and Scope

How to calculate line spacing

2. Procedure Inputs and Outputs

Inputs: Least depth, swath width, draft, and range scale.

Outputs: line spacing

2. Procedure

SIDE SCAN LINES

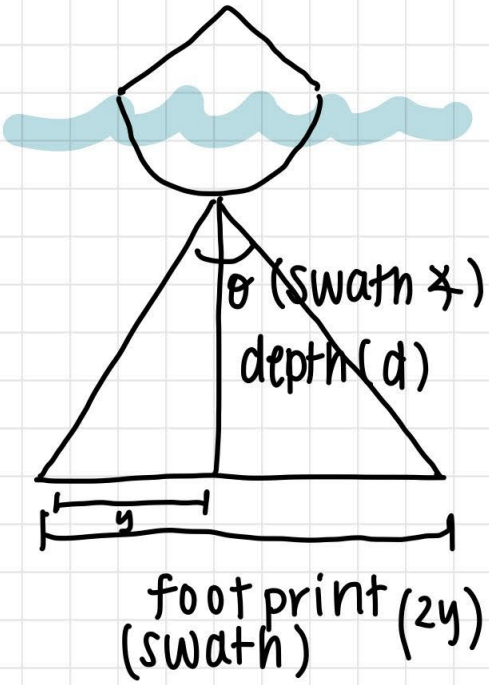
For Side Scan, make polygons to group together like depths

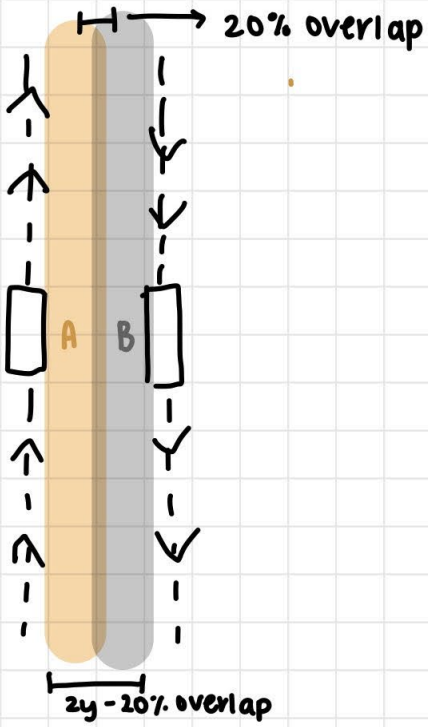
1. Line Spacing= 1.6 x Range Scale (RS)
2. Towfish height range = 8-20% Range Scale (RS)

Range Scale (m)	height range (m)	Line Spacing (m)
100	8-20	160
75	6-15	120
50	4-10	80
25	2-5	40

MBES LINES

Line Spacing 101





There are 2 main ways of calculating Line spacing

1. "The fast and dirty" way
   2.8 x least depth
   ex. 2.8 x 60m = 168m

2. The "more accurate but longer" way

$$y = (\text{least depth} - \text{draft}) \times \tan\left(\frac{\theta}{2}\right)$$

ex: least depth = 60m
draft = 4.6 m
θ = 120°

$y = (60\text{m} - 4.6\text{m}) \times \tan\left(\frac{120}{2}\right)$
$y = (55.4\text{m}) \times 1.732 = 95.95$
footprint = 2(95) = 190

to include the 20% overlap ⇒ 190m - (190m x .2) = **152m Line spacing**

4. References