

FIELD TIDE NOTE

SP-PMC-7-DA-75

SERGIUS NARROWS

Project instructions for SP-PMC-7-DA-75 called for installation of one tide gage at the previous survey's location near Shoal 2, a triangulation station in the Sergius Narrows Channel. As was immediately apparent upon arrival, one gage would not suffice to supply reducers for both the Narrows and the area of principal investigation, East and West Francis Rocks. The ship installed a second gage on Point Sinbad. The attached plot of hourly heights confirms suspected differences of up to two feet at the two locations. As levels could not be carried directly to the Sinbad tide gage, and the project was too short to determine MLLW by series observation, an alternative MLLW determination was made as described in the leveling section.

Boat sheet reductions of soundings for Sergius Narrows were based on Sitka predicted tides. However, since bench mark data was available for Sergius Narrows, real tides from our two tide gage installations were used for the Smooth Field Sheet. The tide correctors were obtained by scaling highs and lows from the marigram and then computing reducers with program AM501 with iteration limits set at 0.2 feet. All times of recorded tides are based on Greenwich Mean Time. Two Bristol Bubbler tide gages were installed in the project area. Location and operational periods were as follows:

<u>SITE</u>	<u>LOCATION</u>	<u>PERIOD</u>
SERGIUS NARROWS	33.5 57/24/ <del>35.8</del> N	16 Oct 75 thru 10 Oct 75
	135/37/ <del>22.5</del> W 34.0	
POINT SINBAD	22.0 57/24/ <del>21.0</del> N	16 Oct 75 thru 19 Oct 75
	135/39/ <del>02.0</del> W 01.0	

SERGIUS NARROWS Gage s/n 73A235 and staff were installed and began operating 16 Oct 75. Continuous good records were obtained from this gage. The anchor slipped once during the installation and was reset, resulting in the following staff/gage comparisons:

1700Z 16Oct75 thru 2147Z 16Oct75	0.0 on staff = 21.1 on the gage
2148Z 16Oct75 thru 2322Z 16Oct75	0.0 on staff = 24.4 on the gage
2323Z 16Oct75 thru 19Oct75	0.0 on staff = 18.2 on the gage



marigram. The mean of the eight MLLW determinations shown was 6.7 feet. Therefore 6.7ft = MLLW on the marigram for the Point Sinbad Tide Station. From this we were able to apply real tide correctors to the Field Smooth Sheet. Comparisons were made at high slack water. Predicted and observed tide curves were plotted for both gages. Equal water levels were observed on both real tide curves at times of predicted slack, lending credence to the initial assumption of no elevation difference during slack water.

### ZONING

Point Sinbad Tide Station is recommended for obtaining final tide reducers west of a line between Sergius Point and Rapids Island. Sergius Narrows Tide Station records should be used for all tide reducers east of the above mentioned line. The accompanying chartlet illustrates where the tidal zoning breaks occur. It is also indicated on the SP-PMC-7-DA-75 Smooth Field Sheet submitted by the DAVIDSON.

# SERGIUS NARROWS

PERIL STRAIT

SP-PMC-7-DA-75

135° 39' W

57° 25' N

135° 37'

57° 25' N

CHICHAGOF ISLAND

SERGIUS NARROWS  
TIDE STATION

Shoal Pt

Sergius Channel

Sergius Pt

POINT SINBAD

POINT SINBAD  
TIDE STATION

SUGGESTED ZONE  
BOUNDARY BETWEEN  
TIDE GAGES

Tralopy  
Rock

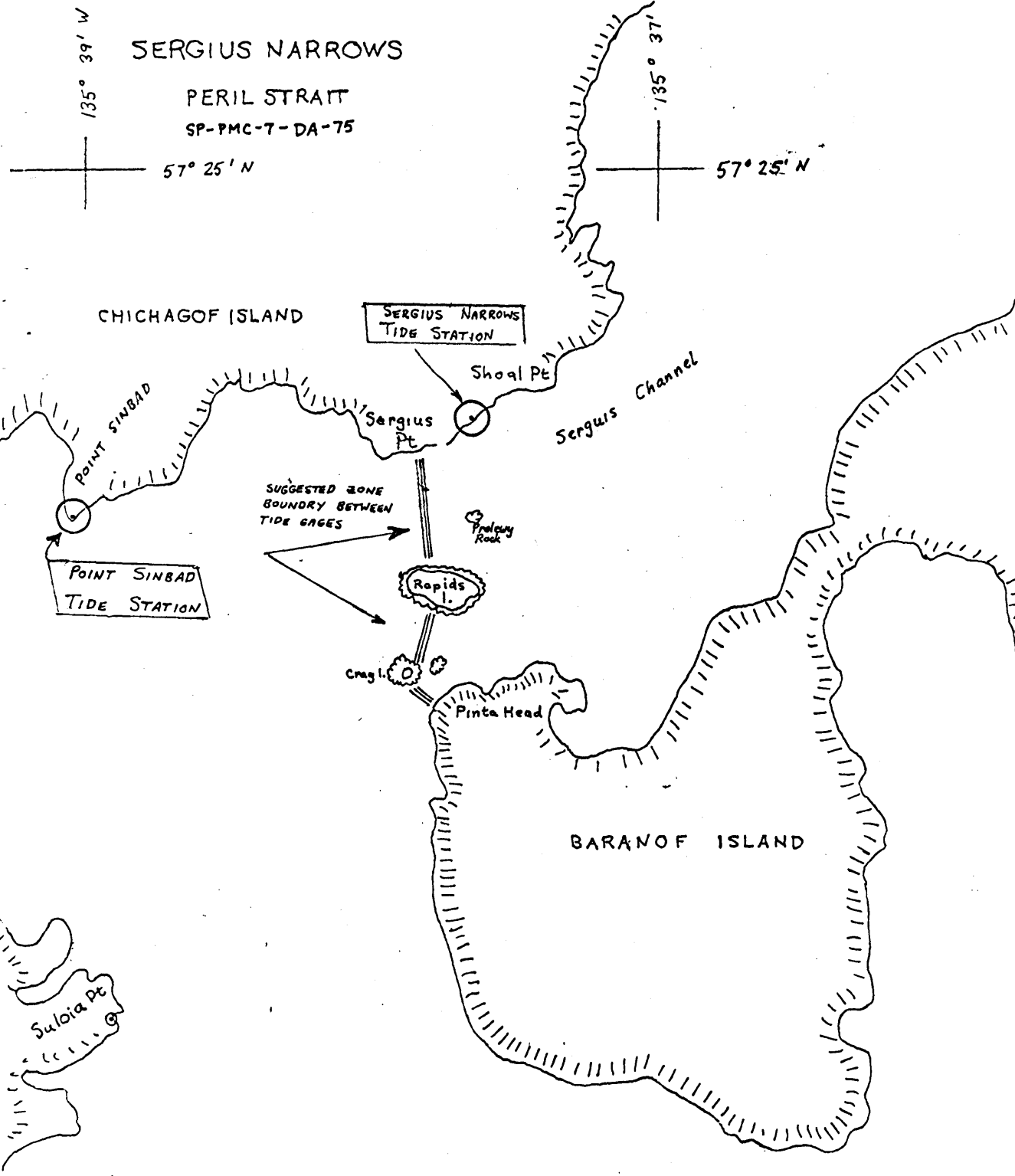
Rapids

Crag

Pinta Head

BARANOF ISLAND

Sulovia Pt



Time (GMT) DAY	Staff Readings (a) Sergius, (c) Pt. Sinbad	$a-b=\Delta$ ( $b=11.1$ )	$c-\Delta$ = MLLW corrector
2345 Z/ Oct. 16	Sergius (a) = 17.2 Pt. Sinbad (c) = 12.8	$17.2 - 11.1 = 6.1$	$12.8 - 6.1 = \underline{6.7}$
0554 Z/ Oct 17	(a) = 20.9 (c) = 16.5	$20.9 - 11.1 = 9.8$	$16.5 - 9.8 = \underline{6.7}$
1200 Z/ Oct 17.	(a) = 16.5 (c) = 12.1	$16.5 - 11.1 = 5.4$	$12.1 - 5.4 = \underline{6.7}$
1812 Z/ Oct 17	(a) = 21.6 (c) = 17.2	$21.6 - 11.1 = 10.5$	$17.2 - 10.5 = \underline{6.7}$
0025 Z/ Oct. 18	(a) = 16.3 (c) = 11.8	$16.3 - 11.1 = 5.2$	$11.8 - 5.2 = \underline{6.6}$
0634 Z/ Oct 18	(a) = 21.0 (c) = 16.6	$21.0 - 11.1 = 9.9$	$16.6 - 9.9 = \underline{6.7}$
1245 Z/ Oct. 18	(a) = 16.6 (c) = 12.2	$16.6 - 11.1 = 5.5$	$12.2 - 5.5 = \underline{6.7}$
1848 Z/ Oct. 18	(a) = 22.5 (c) = 18.2	$22.5 - 11.1 = 11.4$	$18.2 - 11.4 = \underline{6.8}$

The mean of the eight MLLW correctors shown above is 6.7. 0 marigram equals 6.7 MLLW.

Tide reducers, for plotting purposes, were computed by program AM500. The highs and lows were picked off observed tides and correctors computed. The reducers, therefore, are a sinusoidal approximation to the observed tide curve.

Tide reducers and velocity correctors were applied to the soundings on the Field Smooth Sheets DA-5-1A-75 and DA-5-1B-75.