

Appendix D - Tides and Water Levels

Abstract of Times of Hydrography For Smooth Tides

Project Number: OPR-R144-KR-02

Contractor Name: Thales GeoSolutions (Pacific) Inc.

Sheet Letter: A

Inclusive Dates: June 3, 2002 to June 10, 2002

Verified tides were applied for the production of the smooth sheet. Refer to LCMF's final verified tides report for additional information.

Registry Number: H11092

Date: Jan 28th, 2003

Table 4 Abstract of Times of Hydrography for SHOALS Aircraft

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2002	154	06:21:08	07:36:39	
2002	155	02:12:56	02:53:33	
2002	156	04:28:36	07:46:28	
2002	160	18:14:10	23:59:59	
2002	161	00:00:00	00:03:30	
2002	161	07:03:09	07:17:56	

2002 FIELD and FINAL TIDE NOTE

Hydrographic Sheet: H11092 (LIDAR)

Sheet A

SW of St. Paul Island

Bering Sea, Pribilof Islands

NOAA Project No:	OPR-R144-KR-2002 Alaska				
NOAA Contract No:	50-DGNC-0-90017				
The NOS Unalaska, AK tide station (946-2620) served as control for the subordinate station on this project. Datum determinations were made for the primary subordinate station: Village Cove (946-4212). The NTDE 1960-78 was utilized.					
Location and Time Meridian	Name: Village Cove	Lat (NAD 83) 57° 07' 31"	Long (NAD 83) 170° 17' 07"	Time Meridian: 0° (UTC)	
Time Period and Datum Reference	Name: Village Cove	Established: 4/12/2002	Removed: 6/20/2002	MLLW 0.000	MHW units 0.904 meters
Tide observer	LCMF Incorporated 139 E. 51st Ave. Anchorage, Alaska 99503 (under subcontract to Thales GeoSolutions, Anchorage, AK)				
Gauges	Design Analysis H350/355 bubbler systems.				
Installation	Each gauge was secured inside a waterproof case, and fastened vertically inside of the tool shed on the St. Paul City fuel dock. Refer to the tide station package for additional site specific details of installation.				
Tide staff	None. Water level measurements were made using a fiberglass survey tape. The tape end was weighted, lowered to the water till the weight was submerged and the tape was read at a chiseled 'X' on the edge of the dock ladder.				
Benchmarks	The following benchmarks were installed at this site: Village Cove: 4212 N 2002, 4212 P 2002 The following benchmarks were recovered at this site: Village Cove: BM "3" 1946, BM "4" 1946, 4212 L 1976, USACE SP-3 2001, USACE RBD - 1 1994				
Levels	Benchmarks were leveled at the installation and removal of the tidal station. The benchmarks and station datums were connected through frequent measurements to the water. The level runs closed within NOS tolerance. Benchmark USACE RBD - 1 1994 was not stable. Only the closeout levels from 6/19/02 were used in determining the MLLW elevation of BM USACE RBD- 1 1994.				
Final Tidal Zoning	One zone for the entire project. Used Village Cove data directly.				
Reduction of LIDAR data	Thales GeoSolutions (the prime contractor) was provided with preliminary datums developed by LCMF during May 2002 based upon an 11 day simultaneous comparison between Unalaska and Village Cove. Six minute tide data reduced to MLLW and smoothed with a 5th order 5 hour polynomial curve fit was provided to Thales throughout the field season. In June 2002, LCMF finalized datums and forwarded all data necessary to reduce lidar soundings to the prime contractor. Final MLLW datums were based on a one month, May 2002, monthly mean computation from Unalaska.				