

Appendix D - Tides and Water Levels

Abstract of Times of Hydrography For Smooth Tides

Project Number: OPR-P353-KR

Registry Number: H-10968

Contractor Name: Racal Pelagos Inc.

Date: April 25, 2000

Sheet Letter: B

Inclusive Dates: July 4, 2000 to November 12, 2000

Field work is Complete and verified tides were applied for the production of the smooth sheet. Refer to LCMF's final verified tides report for additional information.

Abstract of Times of Hydrography for F/V Quicksilver:

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2000	186	23:18:26	23:59:59	
2000	187	00:00:00	02:55:15	
2000	187	16:10:48	23:59:59	
2000	188	00:00:00	02:28:06	
2000	188	18:54:34	23:59:59	
2000	189	00:00:00	02:12:28	
2000	189	16:38:38	23:59:59	
2000	190	00:00:00	04:48:47	
2000	190	18:07:55	23:59:20	
2000	191	00:04:42	03:07:23	
2000	191	19:19:01	23:59:59	
2000	192	00:00:00	02:35:13	
2000	192	17:36:26	23:59:59	
2000	193	00:00:00	03:26:56	
2000	193	17:42:47	23:59:59	
2000	194	00:00:00	02:35:38	
2000	194	17:07:02	23:59:59	
2000	195	00:00:00	03:00:00	
2000	195	16:55:09	23:59:59	
2000	196	00:00:00	02:18:24	
2000	196	18:29:36	23:58:40	
2000	197	00:00:04	03:40:56	
2000	197	22:14:44	23:59:59	
2000	198	00:00:00	03:10:44	
2000	198	19:14:13	22:30:07	
2000	199	00:19:22	03:01:01	
2000	199	17:28:50	23:55:40	
2000	200	00:15:37	03:02:05	
2000	200	17:13:52	18:38:30	
2000	201	02:16:12	02:55:11	
2000	201	18:17:16	23:42:05	
2000	202	01:38:21	02:00:40	
2000	231	02:02:08	02:50:17	
2000	231	16:34:34	23:52:51	

2000 FIELD and FINAL TIDE NOTE

Hydrographic Sheet: H-10968 (Sheet B) KENAI FIORDS, AK

NOAA Project No:	OPR-P353-KR-00 KENAI FIORDS, Alaska		
NOAA Contract No:	50-DGNC-8-90028		
<p>The Seward, Alaska tide station (945-5090) served as control for the subordinate stations for this project. Datum determinations were made for subordinate stations, Bear Cove (945-5128), Aialik Sill (945-5146), and North Aialik (945-5145). These sites generated the final tide reducer files and were the basis for final zoning. Two short term tidal zoning sites: Coleman Bay (945-5137), and NW Holgate Arm (945-5168), were used to refine tidal zoning and check potential tidal anomalies (none found). The NTDE 1960-78 was utilized</p>			
Location and Time Meridian	Name:	Lat (NAD 83)	Long (NAD 83)
	Bear Cove:	59° 48' 05"	149° 38' 51"
	Aialik Sill:	59° 41' 38"	149° 44' 52"
	North Aialik:	59° 57' 15"	149° 42' 53"
			Time Meridian:
			0° (UTC)
			0° (UTC)
			0° (UTC)
Time Period and Datum Reference	Name:	Established:	Removed:
	Bear Cove:	06/25/2000	11/15/2000
	Aialik Sill:	06/26/2000	11/11/2000
	North Aialik:	06/29/2000	08/26/2000
			MLLW
			MHW
			units
			0.000
			2.952 meters
			0.000
			2.961 meters
			0.000
			2.962 meters
Tide observer	LCMF Incorporated 139 E. 51st Ave. Anchorage, Alaska 99503 (under subcontract to Racal Pelagos, San Diego, CA)		
Gauges	Design Analysis H350/355 bubbler systems.		
Installation	Each gauge was secured inside a waterproof case, and fastened vertically to a wooden brace above the high water line. A tent covered each gauge site installation. Refer to the tide station packages for additional site specific details of installation.		
Tide staff	None Spirit leveling was observed between a nearby tidal bench mark and the water. The survey rod was outfitted with a stilling well to dampen wave action.		
Benchmarks	The following benchmarks were installed at these sites: Bear Cove: 5128 A 2000, 5128 B 2000, 5128 C 2000, 5128 D 2000, and 5128 E 2000 Aialik Sill: 5146 A 2000, 5146 B 2000, 5146 C 2000, 5146 D 2000, and 5146 E 2000 North Aialik: 5145 A 2000, 5145 B 2000, 5145 C 2000, 5145 D 2000, and 5145 E 2000		
Levels	Benchmarks were leveled at the installation and removal of each tidal station. The benchmarks and station datums were connected through frequent leveling to the water. The level runs closed within NOS tolerance. Benchmarks were stable.		
Final Tidal Zoning	The final tidal zoning follows this report (color map and Mapinfo zoning file).		
Reduction of Multibeam data	Racal Pelagos (the prime contractor) was provided preliminary datums, and tidal zoning, developed by LCMF during July 2000 and MLLW correctors throughout the field season. In January 2001, LCMF finalized datums, and revised the tidal zoning and forwarded all data necessary to reduce soundings to the prime contractor.		

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2000	232	00:00:00	02:42:20	
2000	232	16:52:36	19:45:32	
2000	233	00:01:50	02:03:13	
2000	233	17:26:07	19:50:17	
2000	236	19:45:17	23:59:59	
2000	237	00:00:00	03:17:17	
2000	237	17:23:09	23:00:21	
2000	238	01:10:42	02:47:18	
2000	238	17:12:15	20:06:13	
2000	239	00:37:29	01:28:07	
2000	260	22:10:11	23:59:59	
2000	261	00:00:00	00:00:31	
2000	261	00:06:30	02:53:05	
2000	261	15:36:03	21:17:10	
2000	288	01:08:18	01:54:20	
2000	290	00:11:57	03:29:44	
2000	290	18:06:20	23:59:59	
2000	291	00:00:00	03:31:40	
2000	291	17:21:33	23:12:46	
2000	292	00:27:56	01:11:32	
2000	296	21:25:40	22:48:16	
2000	297	02:24:37	03:39:05	

Abstract of Times of Hydrography for Sea Ducer:

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2000	254	23:14:30	23:56:22	
2000	255	00:04:07	03:04:20	
2000	255	16:17:39	23:59:24	
2000	256	00:11:04	02:20:59	
2000	256	16:40:05	20:41:14	
2000	257	17:00:05	23:59:59	
2000	258	00:00:00	01:58:37	
2000	260	21:06:21	23:59:32	
2000	261	00:00:57	02:32:23	
2000	261	16:30:52	23:59:59	
2000	262	00:00:00	00:03:11	
2000	262	00:09:43	02:24:30	
2000	262	17:13:34	20:37:16	
2000	284	21:17:58	23:50:30	
2000	285	00:09:29	01:43:44	
2000	285	17:08:48	23:21:10	
2000	302	20:47:14	23:45:47	
2000	303	00:01:23	02:22:45	

YEAR	DAY	START TIME (UTC)	END TIME (UTC)	COMMENTS
2000	303	17:48:42	23:59:59	
2000	304	00:00:00	02:39:10	
2000	304	18:10:32	23:58:39	
2000	305	00:10:59	02:44:28	
2000	305	17:12:34	23:59:59	
2000	306	00:00:00	02:36:22	
2000	306	17:03:54	23:55:35	
2000	307	00:00:51	02:30:21	
2000	307	17:12:54	22:58:59	
2000	308	00:40:04	02:57:56	
2000	310	18:07:00	23:58:46	
2000	311	00:32:52	02:37:19	
2000	311	17:29:18	23:28:36	
2000	312	00:29:15	02:55:36	
2000	312	17:03:34	23:53:57	
2000	317	17:24:13	18:40:14	