APPENDIX IV – TIDES AND WATER LEVELS

Abstract of Times of Hydrography

Start and End times refer to tidal applications requirement.

Time on Task indicates actual time of task in the survey area. All times and dates are in UTC.

04_4mitro1

Date Flown	JD	Sortie No	Start time	End Time	Time On Task
May-26-04	147	1	23:00	04:00	01:42
Jun-27-04	179	2	23:00	02:30	00:05
Jul-04-04	186	3	23:00	06:00	03:22
Jul-06-04	188	4	17:30	00:30	03:04
Jul-07-04	189	5	17:00	03:00	05:28
Jul-08-04	190	6	23:00	07:30	04:23
#Jul-18-04	200	8	23:30	08:00	05:30
Aug-02-04	215	9	23:30	06:00	02:43
Aug-04-04	217	11	18:00	01:00	03:20
Aug-06-04	219	12	17:30	24:00	04:48
Aug-07-04	220	13	18:00	01:00	03:30
Aug-15-04	228	14	20:00	04:30	03:05
*Aug-20-04	233	15	19:30	00:30	01:07
Sep-2-04	246	17	18:00	22:00	01:17

04_4mitro2

Date Flown	JD	Sortie No	Start time	End Time	Time On Task
May-29-04	150	1	22:30	04:30	03:31
May-30-04	151	2	21:00	05:30	05:45
Jun-04-04	156	3	23:30	05:30	2:29
Jun-05-04	157	4	16:00	18:30	00:16
Jun-12-04	164	5	23:00	05:30	03:19
Jun-13-04	165	6	23:00	04:30	03:29
Jun-26-04	178	8	20:30	05:30	04:53
Jul-04-04	186	10	23:00	06:00	03:22
Jul-05-04	187	11	18:00	02:30	04:30
Jul-06-04	188	12	17:30	05:00	03:04
Jul-10-04	192	14	20:30	05:30	04:33
#Jul-18-04	200	16	23:30	08:00	05:30
Jul-20-04	202	17	23:30	07:00	03:58

Date Flown	JD	Sortie No	Start time	End Time	Time On Task
Jul-23-04	205	18	20:00	05:30	03:23
Jul-28-04	210	19	22:30	03:30	00:19
Jul-29-04	211	20	22:00	07:00	04:52
Aug-07-04	220	21	23:00	05:00	01:40
Aug-15-04	228	22	21:00	04:30	03:05
*Aug-20-04	233	23	19:30	00:30	01:07
*Aug-31-04	244	25	21:45	02:27	00:10

04_4mitro3

Date Flown	JD	Sortie No	Start time	End Time	Time On Task
#Jul-18-04	200	8	23:30	08:00	05:30
Aug-19-04	232	12	18:00	22:00	00:57

Note:

* denotes that 04_4mitro1 and 04_4mitro2 were both flown in the same sortie.

\# denotes that 04_4mitro1, 04_4mitro2 and 04_4mitro3 were all flown in the same sortie.

04_4mitro3 was a database created for reconnaissance only.

Tide Station Report
Mitrofania Island
(SUPPLIED BY JOA)

Position:	*Latitude (NAD 83)* 55° 53' 22"	*Longitude (NAD83)* 158° 49' 11"	*Time Meridian* 0° (UTC)
Owner:	*Tidelands* State of Alaska		*Uplands* USFWS Alaska National Maritime Refuge
Type of Station:	Tertiary		
Density Observations:	Yes		
Project Type:	Hydrographic		
Established:	4/20/04		
Removed:	9/804		
Tide Observer:	John Oswald & Associates, LLC (JOA) 2000 East Dowling Rd., Suite 10 Anchorage, Alaska 99507 Phone: (907) 561-0136 Fax: (907) 561-0143		
Project Manager:	John Oswald, PLS, CHS		
Prime Contractor:	Tenix LADS Inc. (ATTN: Darren Stephenson)		
NOS Project No:	OPR-P182-KRL-04		
NOS Contract No:	DG 133C-03-CQ-0011		
JOA WO No:	24		
Tide House and Platform:	Tide gauges were housed in a 4' X 4' X 8' plywood box covered with a camouflage tarp located approximately 15 m above the beach in grass. The orifices for gauge 1 and 2 are attached to separate sheet pile anchors, weighing about 250 lbs each, in 7.5 m of water. The orifice for tide gauge 3 has an approximately 400 lb I-beam as an anchor and is located in approximately 9.5 m of water. The anchors were set offshore using the F/V Captain "G". The tubing from each orifice to the respective tide gauge is approximately 110 m in length.		
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.		
Tide Gauge:	Three tide gauges were installed at this site. Each gauge is a Design Analysis Associates H350XL/H355 digital bubbler. Each system is powered by a 12vdc battery and solar cells for recharging. Data was transmitted via GOES telemetry for each gauge using Signal Engineering radios and Yagi antennas.		

Tide Gauge	Date	Tide Gauge S/N
1	4/20/04	1043
2	4/20/04	1042
3	4/20/04	1038

Primary Benchmark:	9016 E 2004	
Initial leveling:	4/22/04	9016 A 2004, 9016 B 2004, 9016 C 2004, 9016 D 2004, 9016 E 2004
Close-out leveling:	9/8/04	
Existing tidal bench marks:	0	
New tidal bench marks:	5	
JOA Field Book:	2004.02	

Tide Station Location
Mitrofania Island
945-9016

Position:	*Latitude (NAD 83)* 55° 53' 22"	*Longitude (NAD83)* 158° 49' 11"	*Time Meridian* 0° (UTC)
Owner:	*Tidelands* State of Alaska		*Uplands* USFWS Alaska National Maritime Refuge
Established:	4/20/04		
Removed:	9/804		
Tide Observer:	John Oswald & Associates, LLC (JOA) 2000 East Dowling Rd., Suite 10 Anchorage, Alaska 99507 Phone: (907) 561-0136 Fax: (907) 561-0143		
Project Manager:	John Oswald, PLS, CHS		
Prime Contractor:	Tenix LADS Inc. (ATTN: Darren Stephenson)		
NGS Project No:	OPR-P182-KRL-04		
NGS Contract No:	DG 133C-03-CQ-0011		
JOA WO No:	24		
Location:	To reach the bench marks from the harbor in Sand Point, AK, proceed NE 20.5 km (11 nm) to the north point of Korovin Island, then proceed ENE 46 km (25 nm) to the SE point of Kupreanof Point, then proceed NE 60 km (32 nm) to a west facing cove on the north side of Mitrofania Island. The benchmarks are located in the NE corner of the cove. The tide gauge orifices are located approximately 110 m offshore.		
GPS Tie:	Primary benchmark 9016 E 2004 was observed multiple times at a minimum of six hours each. Observations were processed and adjusted using NGS Pages NT and NGS Adjust. Methodology and results were documented in a comprehensive report (Fall 2004).		
Existing tidal bench marks:	0		
New tidal bench marks:	5		
Primary Bench Mark:	9016 E 2004		

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 Mitrofania Island Zones, 4 Zones
 REVISED FROM NOAA ZONING dtd Aug 15, 2003
 MAPINFO FORMAT; NAD 83
 May 5, 2004 Zoned by JOA
 NOAA Project OPR-P182-KRL-04
 PROJECT NAME: SW ALASKA PENINSULA Devils Bay to Anchor Bay
 GAUGE AT: Mitrofania IS = 945-9016
 GAUGE AT: Sand Point = 945-9450

M1,0,0,0,0,0,0,0,9459016,0,0.960,9459450,0,1.050,**VV EO&JO, 5
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-158.60500  55.27500
-158.42833  55.42500
-159.34167  55.98333
-159.83167  55.94000
M2,0,0,0,0,0,0,0,9459016,0,1.000,9459450,0,1.090,**VV EO&JO, 5
-159.34167  55.98333
-158.42833  55.42500
-158.27000  55.72500
-158.96667  56.07500
-159.34167  55.98333
M3,0,0,0,0,0,0,0,9459016,0,1.040,9459450,0,1.130,**VV EO&JO, 5
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-158.27000  55.72500
-158.15000  55.87000
-158.70833  56.15000
-158.96667  56.07500
M4,0,0,0,0,0,0,0,9459016,0,1.080,9459450,0,1.170,**VV EO&JO, 5
-158.70833  56.15000
-158.15000  55.87000
-158.05000  56.00000
-158.50000  56.20500
-158.70833  56.15000
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