Part 12 of 19 of Appendices for Resource Report No. 13 LNG

APPENDIX 2-B

DAILY LINE LOGS

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	25-May-2015 Mon Julian Day: 145			CLIENT:	AK LNG
PROSPECT / SITE:	Anchorage			JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack			AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly
JOB DAY #:	Day: 1	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	232 — 577.80 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	577,800.00 — 0.0% Complete
		NAUTICAL MILE:	6080.0		

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	cloudy, light rain	light aires	
Wx - 1800:	cloudy, light rain	light aires	
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	Yes	JHA - mob activities
Shift Change:		
Safety:	Yes	Vessel orientations, Training/instruction for the local Forklift for Eddie Stutts
Pre/Post JOB:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	MD									
1900											

DETAILED SURVEY INFORMATION

Mobilization in Anchorage

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	26-May-2015 Tue Julian Day: 146
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 2
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 0.0% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt
Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	cloudy,	light	var.
Wx - 1800:	sunny	light	var.
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	x	JHA- job activities
Shift Change:		
Safety:	x	Vessel Orientation
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	MD									
1900											

DETAILED SURVEY INFORMATION

R/V Westerly Mobilization In Anchorage

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	27-May-2015 Wed Julian Day: 147
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 3
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 0.0% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	
Wx - 1200:	sunny	light	var.
Wx - 1800:	sunny	light	var.
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	x	JHA- job activities
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	MD									
1900											

DETAILED SURVEY INFORMATION

Mobing RV Westerly in Anchorage

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	28-May-2015 Thu Julian Day: 148
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 4
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 0.0% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt
Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	in port	light	var.
Wx - 1800:	in port	light	var.
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	x	JHA- rob activities
Shift Change:		
Safety:	x	vessel orientation for Cody Gibson
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	MD									
1900											

DETAILED SURVEY INFORMATION

Mobilization of RV Westerly in Anchorage

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	29-May-2015 Fri Julian Day: 149
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 5
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG	
JOB DESCRIPTION:	Seafloor Mapping	
AREA & BLOCK:	LNG Sites	
R/V:	Westerly	
No. of SURVEY LINES:	232	577.80 Kilometers 0.0% Complete

GEOPHYSICAL EQUIPMENT

EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	calm	light	var
Wx - 1800:	0.3m	10-15kts	SW
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	x	Mob Activities
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	MD									
1900											

DETAILED SURVEY INFORMATION

Mobilization of RV Westerly in Anchorage

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	30-May-2015 Sat Julian Day: 150
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 6
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 0.0% Complete

GEOPHYSICAL EQUIPMENT

EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	Calm	light	var
Wx - 1800:	0.3m	10	SW
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	x	JHA-mob activities
Shift Change:		
Safety:		
Pre/Post JOB:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	MD									
1900											

DETAILED SURVEY INFORMATION

Reposition Vessel from Anchorage to Kenai

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	31-May-2015 Sun Julian Day: 151
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 7
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 0.0% Complete

GEOPHYSICAL EQUIPMENT

EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	n/a	light	var
Wx - 1800:	n/a	light	var
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Mob activities
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1100	MD									
1100	1200	MD									
1200	1400	MD									
1400	1500	MD									
1500	1900	MD									
1900											

DETAILED SURVEY INFORMATION

Mob vessel in Kenai
Operational Readiness inspection
Mob vessel in Kenai
Operational Meeting
Mob vessel in Kenai

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	01-Jun-2015 Mon Julian Day: 152
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 8
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG	
JOB DESCRIPTION:	Seafloor Mapping	
AREA & BLOCK:	LNG Sites	
R/V:	Westerly	
No. of SURVEY LINES:	232	577.80 Kilometers
		0.0% Complete

GEOPHYSICAL EQUIPMENT

EQUIP	#
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	0.7m	10-15 kts	SW
Wx - 1800:	1.5m - 2.0m	15-20 kts	SW
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA, Review MAR-TRA- 001,006,011,012,013,015
Shift Change:		
Safety:	Yes	Vessel Orientation for Client Rep, 1 HOC Card, Mob drill conducted
Pre/Post JOD:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0700	0715	Cal										Arrive on vessel
0715	0730	CAL										Vessel Oreintation for Client Rep
0730	0745	CAL										JHA-Toolbox Talk
0745	0905	CAL										Transit To Boulder Pt. for MBES Patchtest
0905	0920	CAL										Arrive at Patchtest Site
0920	0930	CAL										MOB DRILL
0930	0940	CAL										JHA-Toolbox Talk
0940	0950	CAL										MBESeployed
0950	1025	CAL										Conduct a SVP
1025	1033	CAL										HDG FOR LINE
1033	1210	CAL										Start MBES Calibration
1210	1240	CAL										End MBES Calibration
1240	1305	CAL										MBES Performance Test
1305	1310	CAL										Conduct SVP for Performance test
1310	1320	CAL										Deploy USBL Transducer
1320	1400	CAL										Deploy Sidescan and Magnetometer
1400	1545	CAL										Collect Sidescan and magnetometer data over known bottom feature in 2 directions
1545	1600	CAL										Recover towfish
1600	1610	CAL										Recover MBES Tranducer
1610	1830	CAL										Transit to Fueling Jetty
1830	1850	CAL										Fueling Complete
1850	1855	CAL										Arrive at Cannery Dock
1855	1900	CAL										Depart Vessel
1900												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	02-Jun-2015 Tue Julian Day: 153
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 9
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 0.0% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt
Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	n/a	10-15kts	S
Wx - 1800:	n/a	10-15kts	S
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	Yes	JHA-Deploying/Recovering Survey Equip
Shift Change:		
Safety:	Yes	Installed Eyewash Bottles on Vessel
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	0750	OW									
0750	0755	SM									
0755	0825	IT									
0825	0900	WS									
0900	1900	WS									
1900											

DETAILED SURVEY INFORMATION

Crew on vessel securing equipment,
JHA-Toolbox talk
Depart Jetty
Decision made to return to port due poor weather forecast combined with lowtidewhich would prevent vessel to return to dock during poor weather
At Cannery Dock
Waiting on Weather

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	03-Jun-2015 Wed Julian Day: 154	CLIENT:	AK LNG
PROSPECT / SITE:	Anchorage	JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 10	No. of SURVEY LINES:	232 — 577.80 Kilometers
CRP TO STERN:	0.00 N/A		6.0% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502279
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt
Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:			
Wx - 1200:	0.3m	Light	Var
Wx - 1800:	0.3m	Light	Var
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:		Kelly Power
Toolbox:	X	JHA-SurveyOperations
Shift Change:		
Safety:	X	HOC Card for a safe observation
Pre/Post Job:		

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
0640	0700	OW										On board vessel
0700	0710	SM										JHA-Toolbox talk
0710	0800	IT										Transit to site
0800	0945	OW										Deploy MBES. Conduct SVP. Deploy USBL pole. Test USVP. Deploy sidescan and mag towfish
0945	1049	OW										Transit back to survey site as vessel drifted from site while deploying and testing equipment
1049	1109	OL	TM01_040	015.0°	100	140		50.0	40.0			
1109	1113	LT										
1113	1124	OL	TM01_047	195.0°	100	140		26.0	16.0			
1124	1128	LT										
1128	1146	OL	TM01_041	015.0°	102	142		42.0	32.0			
1146	1155	LT										
1155	1206	OL	TM01_48	195.0°	100	140		25.0	15.0			Changed MBES frequency from 400 to 380 to avoid interference from SS
1206	1212	LT										
1212	1230	OL	TM01_042	015.0°	100	141		36.0	26.0			
1230	1239	LT										
1239	1254	OL	TM01_049	195.0°	100	141		26.0	16.0			
1254	1259	LT										Conducted a USVP while online
1259	1314	OL	TM01_043	015.0°	100	142		37.0	27.0			
1314	1321	LT										
1321	1324	OL	TM01_036	195.0°	100	107		27.0	17.0			
1324	1338	LT										Extended line turn to allow MV Excel to pass thru area
1338	1351	OL	TM01_044	015.0°	100	141		35.0	25.0			
1351	1357	LT										
1357	1414	OL	TM01_050	195.0°	100	143	22.0	44.0	34.0			
1414	1419	LT										
1419	1432	OL	TM01_45	015.0°	100	142	23.0	30.0	20.0			Conducted a USVP while online
1432	1438	LT										
1438	1451	OL	TM01_51	195.0°	100	141	23.0	55.0	45.0			
1451	1506	LT										
1506	1517	OL	TM01_46	015.0°	100	141	25.0	26.0	16.0			
1517	1526	LT										
1526	1536	OL	TM01_37	195.0°	142	158	27.0	66.0	56.0			
1536	1549	LT										

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	03-Jun-2015 Wed Julian Day: 154
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 10
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers
	6.0% Complete

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1549	1558	OL	TM01_39	015.0°	100	136	28.0	32.0	22.0			
1558	1609	LT										
1609	1625	OL	TM01_38	195.0°	100	126	28.0	74.0	64.0			
1625	1637	LT										
1637	1647	OL	TM01_52	015.0°	100	140	28.0	26.0	16.0			
1647	1655	LT										
1655	1717	OL	TM01_59	195.0°	100	141	27.0	68.0	58.0			Conducted a USVP while online
1717	1720	LT										
1720	1731	OL	TM01_53	015.0°	142	183	28.0	30.0	20.0			
1731	1745	OW										Recover Survey Equipment
1745	1840	IT										Transit to Cannery Dock
1840												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	04-Jun-2015 Thu Julian Day: 155
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 11
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 6.0% Complete

GEOPHYSICAL EQUIPMENT

	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:			
Wx - 1200:	1.5-2.0m	15-20kts	NNE
Wx - 1800:	1.5-2.0m	10-15kts	NE
Wx - 2400:			

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA- tailbox talk
Shift Change:		
Safety:	X	HOC Card-Unsafe Condition was rectified upon being noticed
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0000	0000	WS									
0800	0830	WS									
0830	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Onboard vessel, JHA, Small craft advisory in effect, Sea state forecasted to be outside survey limits
Conducted leadline of MBES at Cannery Dock
Waiting on Weather at Cannery Dock

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Jun-2015 Fri Julian Day: 156	CLIENT:	AK LNG
PROSPECT / SITE:	Anchorage	JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 12	No. of SURVEY LINES:	232 — 577.80 Kilometers, 11.7% Complete
CRP TO STERN:	0.00 N/A		

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502279
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt
Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	0.3m	5kts	Var.
Wx - 1800:	0.7m	10kts	S
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Survey Operations
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0645	0700	OW										Onboard vessel, prep for sailing
0700	0710	SM										JHA-Toolbox talk
0710	0740	IT										Depart dock
0740	0800	IT										Vessel slowed as to allow vessel captain to switch to a diffferent fuel filter on Port Engine
0800	0815	IT										Arrive at Site LNG -01
0815	0825	OW										MBES, USBL Pole deployed
0825	0900	OW										USVP
0900	0920	OW										Deploy SS/Mag Towfish
0920	0925	OW										Heading for line, NO SBES as PWR Supply not working
0925	1005	E00										Investigate striping in SS record, Switch Transponder beacons,Usbl beacons not working
1005	1030	E00										Unable to get layback from cable counter into Hypack
1030	1033	LT										
1033	1043	OL	TM01_060	195.0°	100	140	23.0	29.0	19.0			Mag depth was not set during deployment
1043	1130	E00										Recover fish to zero mag
1130	1142	LT										Heading for line
1142	1205	OL	TM01_054	015.0°	100	141	24.0					
1205	1209	LT										
1209	1222	OL	TM01_061	195.0°	100	141	22.0	28.0	17.0			Conduct SVP while online
1222	1229	LT										
1229	1254	OL	TM01_055	015.0°	100	141	22.0	55.0	45.0			
1254	1258	LT										
1258	1309	OL	TM01_062	195.0°	100	140	23.0	26.0	16.0			
1309	1317	LT										
1317	1337	OL	TM01_056	015.0°	100	141	22.0	41.0	31.0			
1337	1343	LT										
1343	1358	OL	TM01_063	195.0°	100	140	20.0	26.0	16.0			
1358	1407	LT										
1407	1422	OL	TM01_057	015.0°	100	141	23.0	45.0	35.0			
1422	1428	LT										
1428	1443	OL	TM01_064	195.0°	100	140	21.0	26.0	16.0			
1443	1447	LT										
1447	1500	OL	TM01_058	015.0°	100	141	24.0	33.0	23.0			
1500	1505	LT										

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Jun-2015 Fri Julian Day: 156
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 12
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers
	11.7% Complete

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1505	1521	OL	TM01_065	195.0°	100	141	22.0	36.0	26.0			
1521	1527	LT										
1527	1542	OL	TM01_065	015.0°	100	141	23.0	30.0	20.0			
1542	1600	LT										
1600	1620	OL	TM01_034	195.0°	100	142	24.0	45.0	35.0			
1620	1626	LT										
1626	1638	OL	TM01_066	015.0°	100	141	26.0	32.0	22.0			
1638	1644	LT										
1644	1708	OL	TM01_033	195.0°	100	141	26.0	51.0	41.0			
1708	1712	LT										
1712	1722	OL	TM01_067	015.0°	100	140	27.0	32.0	22.0			
1722	1730	OW										Recover SS/Mag
1730	1740	CAL										Hdg for MBES Yaw lines
1740	1747	CAL										Start running cal lines
1747	1800	OW										Recovery MBES/USBL POLE
1800	1910	IT										Transit to dock
1910												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	06-Jun-2015 Sat Julian Day: 157
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 13
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 11.7% Complete

GEOPHYSICAL EQUIPMENT

	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:			
Wx - 1200:	n/a	Light	Var.
Wx - 1800:	na/	Light	Var.
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	x	JHA- Refueling Vessel
Shift Change:		
Safety:	X	Leadership Safety Training for Jim Grant, Kelly Power, Ryan Braget, Ron Eckhardt
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	0900	OW									
0900	1500	SM									
1500	1600	OW									
1600	1900	OW									
1900											

DETAILED SURVEY INFORMATION

Fatigue Day
Safety Leadership Training at Cannery Lodge For Jim Grant, Kelly Power, Ryan Braget
Refuel Vessel
At Cannery Lodge Dock

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	07-Jun-2015 Sun Julian Day: 158
PROSPECT / SITE:	Anchorage
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 14
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 11.7% Complete

GEOPHYSICAL EQUIPMENT

EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Garret Mitchell
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

Senior Hydrographer:	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a		
Wx - 1200:	n/a	5kts	SW
Wx - 1800:	n/a	10-15kts	SW
Wx - 2400:			

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Equipment Installation
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1000	OW									
1000	1200	OW									
1200	1900	OW									
1900											

DETAILED SURVEY INFORMATION

Fatigue Day
Install 12v pwr supply in Equipment rack
Fatigue Day

Alaska LNG

FUGRO
SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	08-Jun-2015 Mon Julian Day: 159	CLIENT:	AK LNG
PROSPECT / SITE:	Cook Inlet	JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 15	No. of SURVEY LINES:	232
CRP TO STERN:	0.00 N/A	ORIGINAL JOB TOTAL:	577,800.00

NAV. DIVIDE BY:	1
NAV. FIX DISTANCE:	50
SURVEY UNITS:	Meters
NAUTICAL MILE:	6080.0

577.80 Kilometers
11.7% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Maria Krynytzky
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	cloudy	10kts	WSW
Wx - 1800:	cloudy	10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	Yes	JHA-Equipment Installation/testing
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0645	0655	E101									
0655	0920	E101									
0920	1430	E101									
1430	1450	E101									
1450	1545	E101									
1545	1845	E101									
1845											

DETAILED SURVEY INFORMATION

Onboard Vessel, JHA-Toolbox talk, Vessel at dock waiting on Port Engine Oil Cooler replacement part
AML Serial connector reterminated, Terminating Mag Winch Cable
Vessel Port Engine Part Arrives
Mag winch slip rings cable end and wet end terminated
SS/Mag Towfish tested through Mag minch cable test ok, wet end potted to
Port Engine repaired

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	09-Jun-2015 Tue Julian Day: 160
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 16
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 11.7% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Maria Krynytzky
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	na/
Wx - 1200:	4'-6'	25kts	NE
Wx - 1800:	4'-6'	15-20kts	NE
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Equipment Installation Testing
Shift Change:		
Safety:	X	Weekly Safety Meeting
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	0845	WS									
0845	0900	WS									
0900	1000	WS									
1000	1030	WS									
1030	1900	WS									
1900											

DETAILED SURVEY INFORMATION

Weekly Safety meeting
JHA-Toolbox talk on vessel
Depart dock
Return to dock
Test magnetometer towfish, reterminate small jumper cable between SS fish and Mag fish

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	10-Jun-2015 Wed Julian Day: 161	CLIENT:	AK LNG
PROSPECT / SITE:	Cook Inlet	JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 17	No. of SURVEY LINES:	232 — 577.80 Kilometers
CRP TO STERN:	0.00 N/A		18.9% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502279
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Maria Krynytzky
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a
Senior Hydrographer	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	N
Wx - 1800:	0.5m	10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-SurveyOperations
Shift Change:	None	
Safety:	X	Medical Emergency Drill
Pre/Post Job:	N/A	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Capt on veesel doing prestart checks
0700	0715	SM										JHA- Survey operations
0715	0855	IT										Transit to LNG-01 Site, Vessel transited at slower speed due to fuel filter issues
0855	0910	OW										Arrive on site
0910	0955	OW										Deployed USBL pole, R2Sonic MBES
0955	1005	OW										Deployed SS/Mag
1005	1010	LT										Hdg for line
1010	1036	OL	TM_032	195.0°	100	141	26.0	35.0	25.0			Online, with SS/MAG/MBES/SBES. Magnetometer not supplying a correct depth value
1036	1041	LT										Recover fish layback in order to try to get layback position into Sonarwhiz
1041	1054	OL	TM_068	015.0°	100	141	27.0	31.0	21.0			Using USBL on this line as we are running with current and layback distance is short ~20m
1054	1102	LT										
1102	1122	OL	TM_031	195.0°	100	141	26.0	55.0	45.0			Using layback distance for SS
1122	1126	LT										
1126	1140	OL	TM_069	015.0°	100	141	27.0	32.0	22.0			Using usbl distance for SS
1140	1145	LT										
1145	1201	OL	TM_030	195.0°	100	141	26.0	60.0	50.0			Using layback distance for SS
1201	1207	LT										
1207	1223	OL	TM_70	015.0°	100	141	27.0	32.0	22.0			Using usbl distance for SS
1223	1228	LT										
1228	1245	OL	TM_029	195.0°	100	141	26.0	46.0	36.0			Using layback distance for SS
1245	1251	LT										
1251	1310	OL	TM_035	015.0°	100	141	27.0	34.0	24.0			Using usbl distance for SS
1310	1318	LT										
1318	1332	OL	TM_021	195.0°	100	141	25.0	41.0	31.0			Using layback distance for SS
1332	1336	LT										
1336	1355	OL	TM_028	015.0°	100	141	26.0	35.0	25.0			Using usbl distance for SS
1355	1400	LT										
1400	1414	OL	TM_020	195.0°	100	141	24.0	34.0	25.0			Using layback distance SS, but on this line USBL did come in and was recorded in Hypack
1414	1418	LT										
1418	1436	OL	TM_027	015.0°	100	141	26.0	48.0	38.0			Using layback distance for SS, Current changed
1436	1442	LT										
1442	1457	OL	TM_019	195.0°	100	141	24.0	26.0	16.0			Using usbl distance for SS
1457	1506	OW										Change fuel filter on Port Engine

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	10-Jun-2015 Wed Julian Day: 161
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 17
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers
	18.9% Complete

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1506	1521	LT										
1521	1546	OL	TM_026	015.0°	100	141	25.0	50.0	40.0			Using layback distance for SS
1546	1550	LT										
1550	1601	OL	TM_018	195.0°	100	141	23.0	26.0	16.0			Using usbl distance for SS
1601	1609	LT										
1609	1630	OL	TM_025	015.0°	100	141	25.0	50.0	40.0			Using layback distance for SS
1630	1633	LT										
1633	1645	OL	TM_017	195.0°	100	141	22.0	26.0	16.0			Using usbl distance for SS
1645	1652	LT										
1652	1712	OL	TM_024	015.0°	100	141	23.0	50.0	40.0			Using layback distance for SS
1712	1716	LT										
1716	1728	OL	TM_016	195.0°	100		22.0	26.0	16.0			Using usbl distance for SS
1728	1743	OW										Recover survey equipment
1743	1755	IT										Transit to Dock, Vessel slowed to change fuel filter on Stbd Engine
1755	1940	IT										VesseLSpd 8.5 kts
1940												At Cannery Dock

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	11-Jun-2015 Thu Julian Day: 162
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 18
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232 — 577.80 Kilometers — 18.9% Complete

GEOPHYSICAL EQUIPMENT

EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Maria Krynytzky
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	15-20kts	SW
Wx - 1800:	n/a	20kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Survey Operations
Shift Change:	N/A	
Safety:	X	1 HOC Card, Unsafe Condition, Rectified
Pre/Post Job:	N/A	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0640	0700	OW										Capt on vessel
0700	0715	SM										JHA-Toolbox talk
0715	0729	IT										Depart Dock
0729	0757	IT										Vessel touched bottom, no damage, tide indicates 1.6' ft, it was in bend just off Kenai City dock
0757	0815	WS										Vessel turned around towards Kenai as tide is low
0815	0850	WS										Waiting on tide, at mooring in Kenai River Mouth
0850	0920	IT										Resume transit to LNG-01 Survey Site
0920	1010	WS										Vessel returning to port, Seas 4-5',Marginally at best, Forecast calls for increasing seas and winds, Logged SBES while transiting to dock thru chann
1010	1300	WS										Vessel alongside Cannery Dock, Created a spare cable for for SS to Mag
1300	1630	WS										Test and log some USBL data, documented the MBES leadline check, mustang floater inventory equipment inventory
1630	1840	WS										Test mag system, switch out soft tow lead from mag to SS fish, installed fins onto spare SS
1840												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	12-Jun-2015 Fri Julian Day: 163	CLIENT:	AK LNG
PROSPECT / SITE:	Cook Inlet	JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 19	No. of SURVEY LINES:	232 — 577.80 Kilometers
CRP TO STERN:	0.00 N/A		25.5% Complete

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502279
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Maria Krynytzky
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a
Senior Hydrographer	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	1.0m	light	var
Wx - 1800:	0.3	light	var
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	None	
Pre/Post Job:	None	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0600	0630	OW										Capt On vessel doing prestart checks
0630	0640	SM										JHA-Toolbox talk
0640	0740	IT										Arrive on site
0740	0820	OW										Deploy USBL Pole, moonpool, Conduct SVP, Launch SS/Mag towfish
0820	0829	LT										
0829	0842	OL	TM_058	195.0°	100	140	21.0	26.0	16.0			MBES/SS/MAG/SBES, SS record shows tugging from cable, Using USBL ,Seas are 2-3'
0842	0847	LT										
0847	0903	OL	TM_023	015.0°	100	139	23.0	40.0	30.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback, turned offline near EOL to log
0903	0909	LT										
0909	0923	OL	TM_014	195.0°	100	139	20.0	30.0	20.0			MBES/SS/MAG/SBES, SS record shows tugging from cable, Using USBL, there is lot of debris(floating logs) on line
0923	0928	LT										
0928	0942	OL	TM_022	015.0°	100	139	23.0	40.0	30.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback, Avoiding Debris in water while online
0942	0953	LT										
0953	1009	OL	TM_007	195.0°	100	139	22.0	32.0	22.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback, Avoiding Debris in water while online
1009	1013	LT										
1013	1027	OL	TM_013	015.0°	100	139	23.0	32.0	22.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback, Lot of debris in water
1027	1033	LT										
1033	1055	OL	TM_006	195.0°	100	140	23.0	36.0	26.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,
1055	1059	LT										
1059	1110	OL	TM_012	015.0°	100	139	23.0	25.0	15.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback, Conducted USVP
1110	1118	LT										
1118	1145	OL	TM_005	195.0°	100	140	25.0	37.0	27.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,
1145	1149	LT										
1149	1200	OL	TM_011	015.0°	100	140	25.0	25.0	15.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,
1200	1210	OW										SS Fish lost power
1210	1214	OW										SS/Mag towfish on deck
1214	1224	OW										Fish ok, Did rub test ok redeployed
1224	1247	OW										Sail back to line
1247	1309	OL	TM_004	195.0°	100	141	26.0	51.0	41.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,
1309	1312	LT										
1312	1325	OL	TM_010	015.0°	100	140	26.0	26.0	16.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,
1325	1332	LT										Jet prop sucked some debris up but it passed ok
1332	1355	OL	TM_003	195.0°	100	140	27.0	36.0	26.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	12-Jun-2015 Fri Julian Day: 163
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 19
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG	
JOB DESCRIPTION:	Seafloor Mapping	
AREA & BLOCK:	LNG Sites	
R/V:	Westerly	
No. of SURVEY LINES:	232	577.80 Kilometers 25.5% Complete

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1355	1359	LT										
1359	1412	OL	TM_009	015.0°	100	139	26.0	26.0	16.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback, Conduct USVP
1412	1425	LT										
1425	1436	OL	TM_002	195.0°	100	123	27.0	50.0	40.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,
1436	1442	LT										
1442	1443	OL	TM_001	195.0°	100	104	27.0	50.0	40.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,
1443	1447	LT										
1447	1503	OL	TM_008	015.0°	100	140	25.0	37.0	27.0			MBES/SS/MAG/SBES, Motion affecting MBES data, Using Layback,
1503	1514	LT										
1514	1528	OLC	TM_034A	195.0°	100	142	26.0	49.0	39.0			Reshoot for mag, but all systems recorded
1528	1532	LT										
1532	1545	OLC	TM_033A	015.0°	100		27.0	50.0	40.0			Reshoot for mag, but all systems recorded
1545	1600	OW										Retrieve Survey Gear
1600	1700	IT										Tranit to Port
1700	1800	OW										At Cannery dock, Equipment list, Measure jetty length to determine if fuel hose from truck can reach vessel
1800												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	13-Jun-2015 Sat Julian Day: 164
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 20
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
31.6% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502279
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag. - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Eddie Stutts
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Brinson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a
Senior Hydrographer	Gilbert Suarez

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	10kts	SW
Wx - 1800:	n/a	10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	Yes	HOC-Suggestion for fuel company to make a fuel hose extension for nozzle
Pre/Post Job:	N/A	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0650	OLC										Capt on boat doing prestart checks
0650	0700	OLC										JHA-Toolbox talk
0700	0725	OLC										Depart jetty
0725	0805	OLC										Switch fuel filter on engine. vessel speed has slowed enroute to site
0805	0840	OLC										arrive at site, deploy Survey equipment
0840	0850	OLC										Winds are light and seas 0.3m
0850	0903	OLC	TM_054A	195.0°	100	141	20.0	25.0	15.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using USBL to track SS fish
0903	0909	OLC										Line Turn
0909	0928	OLC	TM_61A	015.0°	100	141	23.0	39.0	29.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using Layback to track SS fish
0928	0934	OLC										Line Turn
0934	0950	OLC	TM_055A	195.0°	100	141	21.0	22.0	12.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using USBL to track SS fish
0950	0954	OLC										Line Turn
0954	1009	OLC	TM_062A	015.0°	100	141	24.0	36.0	26.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1009	1013	OLC										Line Turn
1013	1026	OLC	TM_56A	195.0°	100	141	21.0	26.0	16.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using USBL to track SS fish
1026	1030	OLC										Line Turn
1030	1043	OLC	TM_63A	015.0°	100	141	24.0	38.0	28.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1043	1049	OLC										Line Turn
1049	1104	OLC	TM_57A	195.0°	100	141	23.0	38.0	28.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1104	1108	OLC										Line Turn
1108	1118	OLC	TM_64A	015.0°	100	141	25.0	39.0	29.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1118	1123	OLC										Line Turn
1123	1143	OLC	TM_058A	195.0°	100	142	24.0	37.0	27.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish, Conducted Usvp
1143	1147	OLC										Line Turn
1147	1159	OLC	TM_065A	015.0°	100	141	25.0	26.0	16.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1159	1205	OLC										Line Turn
1205	1221	OLC	TM_059A	195.0°	100	127	24.0	42.0	32.0		DNP	Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish, abort line to avoid a passing ship
1221	1239	OLC										Line Turn to maintain a vessel port to port passing
1239	1250	OLC	TM_066A	015.0°	100	140	27.0	26.0	16.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1250	1255	OLC										Line Turn
1255	1320	OLC	TM_059B	195.0°	100	142	25.0	50.0	40.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1320	1324	OLC										Line Turn
1324	1335	OLC	TM_067A	015.0°	100	140	26.0	30.0	20.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	13-Jun-2015 Sat Julian Day: 164
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 20
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
31.6% Complete
6,900.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1335	1340	OLC										Line Turn
1340	1405	OLC	TM_060A	195.0°	100	142	26.0	55.0	45.0			Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1405	1410	OLC										Line Turn
1410	1418	AM	TM_MBESINFILL03	096.0°	100	119	29.0	41.0	31.0			MBINFILL LINE Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1418	1422	LT										
1422	1434	AM	TM_MBESINFILL02	021.0°	100	143	28.0	29.0	19.0			MBINFILL LINE Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1434	1440	LT										
1440	1446	AM	TM_MBESINFILL01	274.0°	100	117	28.0	60.0	50.0			MBINFILL LINE Collecting SS/MAG/MBES/SBES on a Mag reshoot line using layback to track SS fish
1446	1451	LT										
1451	1510	AM	TM01_RT01	031.0°	100	159	26.0	27.0	17.0			Tieline between LNG-01 and LNG-02. MBES/SBES/SS/Mag. Conducted Usvp
1510	1525	OW										Recover Survey Equipment
1525	1625	IT										Transit To Cannery Dock to Refuel
1625	1645	SM										At Cannery Dock, Review Refuel MAR-TRA-013 with crew and fuel truck crew
1645	1710	OW										Refuel Vessel
1710	1720	OW										Reposition Vessel to outer side of dock
1720	1830	OW										Change out fuel filters on vessel.
1830												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	14-Jun-2015 Sun Julian Day: 165
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 21
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
31.6% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	var.
Wx - 1800:	n/a	5kts	var.
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	1 HOC card, Unsafe condition that was rectified
Pre/Post JOB:	NO	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	0700	OW									
0700	0710	SM									
0710	0800	IT									
0800	0825	OW									
0825	1030	E53									
1030	1123	E53									
1123	1125	E53									
1125	1220	E53									
1220	1245	E53									
1245	1500	E53									
1500	1830	E53									
1830											

DETAILED SURVEY INFORMATION

Prestart checks, morning ops meeting
JHA-Toolbox talk
Depart Dock
MBES/USBL DEPLOYED, AML SVP conducted
Sidescan Decklead is not working. Had to cut BNC connector off and recrimp ne BNC connector on
Sidescan/Mag deployed on secondary winch
Recovered USBL/MBES, Reterminating SS cable and spare mag winch cable
Transit to dock
Arrive at Dock
Reterminate SS cable
Reterminated secondary winch cable

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	15-Jun-2015 Mon Julian Day: 166
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 22
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
34.8% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a
Senior Hydrographer	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	var
Wx - 1800:	n/a	10-15kts	NW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Spill Response Drill
Pre/Post Job:	None	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Ops Meetting
0700	0730	OW										Test SS termination at dock. OK
0730	0825	IT										Depart Cannery Dock
0825	0855	OW										Arrive at LNG-02, Deploy Equipment, Conduct AML SVP
0855	0905	LT										
0905	1004	OL	TM02_001	026.0°	100	197	20.0	32.0	22.0			Collecting MBES/SS/MAG/SBES, At SP 124 STAYED STBD OF LINE AND RAISED FISH TO ENSURE FISH AVOIDED ASL CURRENT METER
1004	1009	LT										
1009	1037	OL	TM02_007	206.0°	100	195	17.0	20.0	10.0			Collecting MBES/SS/MAG/SBES, Shallow, 7 meters cableout, interference on mbes not sure if it is from SSor shallow water related
1037	1044	LT										as vessel went into deeper water mbes interference on outer beam lessened
1044	1125	OL	TM02_002	026.0°	100	197	19.0	30.0	20.0			Collecting MBES/SS/MAG/SBES
1125	1129	LT										
1129	1204	OL	TM02_008	206.0°	100	194	16.0	21.0	11.0			Collecting MBES/SS/MAG/SBES Conductd Usvp
1204	1220	OW										Recovered survey equipment
1220	1305	IT										Transit to Cannery Dock
1305	1430	MD										demob usbl pole
1430	1530	MD										Install "Day" Grab Sampler on stern of vessel. Plywood secure to deck. Frame secure to plywood. Grab sampler secured into Frame.
1530	1630	MD										Review MRA-TRA-OO3 Grab Sample, Test grab sampler operation while alongside the dock. Test includirg 2 dry runs followed by 3 full tests od de
1630	1730	OW										Stow USBL head/pole in Cannery Garage, Conducted a Spill Response Drill
1730	1830	OW										General maintenance and tiding up of work areas on vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	16-Jun-2015 Tue Julian Day: 167
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 23
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
34.8% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	Kristin Reardon
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	var.
Wx - 1800:	n/a	10kts	N
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox, Review MRA-TRA-003
Shift Change:	N/A	
Safety:	X	Vessel Cientation for CH2MILL Rep, 1 HOC Card
Pre/Post JOD:	NO	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops Meeting
0700	0730	OW										Sampling Procedure briefing at CPC
0730	0800	SM										Bring Sampling supplies onto vessel,JHA-Toolbox, Vessel orientation for CH2M HILL Repesentative, Review MRA-TRA-003
0800	0850	IT										Depart Cannery Dock
0850	0910	CO										Grab Sample TM03_01A
0910	0920	COC										Grab Sample TM03_01B
0920	0954	CO										Grab Sample D4SS01_01A
0954	1016	CO										Grab Sample D6SS01_01A
1016	1022	COC										Grab Sample D6SS01_01B
1022	1028	CO										Grab Sample D5SS01_01A
1028	1033	COC										Grab Sample D5SS01_01B
1033	1039	COC										Grab Sample D5SS01_01C
1039	1058	CO										Grab Sample D1SS01_01A
1058	1105	COC										Grab Sample D1SS01_01B
1105	1115	CO										Grab Sample D2SS01_01A
1115	1120	COC										Grab Sample D2SS01_01B
1120	1125	CO										Grab Sample D3SS01_01A
1125	1130	COC										Grab Sample D3SS01_01B
1130	1146	CO										TM03_02A
1146	1250	OW										Media Day Sail Past
1250	1315	IT										Transit to Cannery Dock
1315	1325	IT										Waiting on tide to enter Kenai River
1325	1350	IT										Arrive at Cannery Dock
1350	1415	OW										Grab Sampler Demobed
1415	1445	OW										Usbl Transducer installed
1445	1500	OW										SS and Mag deck test thru primary winch
1500	1715	OW										Test SS/Mag thru secondary winch
1715	1720	OW										Re-Fueling delayed until tomorrow as fuel company could not access fuel from supplier and has to go to Anchorage to get fuel
1720	1830	OW										Captain did maintenance on vessel,survey crew did general maintenance and housekeeping of survey spaces
1830												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	17-Jun-2015 Wed Julian Day: 168
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 24
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
42.7% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	Kristin Reardon
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	light	var.
Wx - 1800:	n/a	10kts	N
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	1 HDC Suggestion for a dolly cart to aid moving equipment to/from vessel
Pre/Post JOB:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0730	SM										Weekly safety meeting
0730	0810	IT										Transit to LNG-02 Survey Site
0810	0835	OW										Survey equipment deployed, Conducted an AML Svp
0835	0842	LT										
0842	0906	OL	TM02_009	206.0°	100	193	20.0	22.0	12.0			MBES/SBES/SS/MAG data collection, USBL Pole lowered "Z" to 4.825m wrt Gaps Antenna inorder to try to improve tracking
0906	0913	LT										
0913	1010	OL	TM02_003	026.0°	100	197	22.0	41.0	31.0			MBES/SBES/SS/MAG data collection, USBL tracking but sporadic. Believe tracking affected by noise(90dB) at transciever from vessel propulsion
1010	1015	LT										
1015	1036	OL	TM02_10	206.0°	100	193	18.0	22.0	12.0			MBES/SBES/SS/MAG data collection, USBL tracking is good. Usbl head noise(76dB) at transciever from vessel propulsion
1036	1044	LT										
1044	1136	OL	TM02_004	026.0°	100	196	20.0	38.0	28.0			MBES/SBES/SS/MAG data collection, USBL tracking is poor. Usbl head noise(90dB) at transciever from vessel propulsion. Possible mag hit sp103
1136	1139	LT										mag hit sp115, sp126, sp132
1139	1206	OL	TM02_011	206.0°	100	192	18.0	19.0	9.0			MBES/SBES/SS/MAG data collection, USBL tracking is good. Usbl head noise(76dB) at transciever from vessel propulsion
1206	1211	LT										
1211	1250	OL	TM02_005	026.0°	100	195	19.0	30.0	20.0			MBES/SBES/SS/MAG data collection, USBL tracking is poor. Usbl head noise(92dB) at transciever from vessel propulsion, conducted a Usvp
1250	1255	LT										
1255	1333	OL	TM02_012	206.0°	100	193	9.0	26.0	16.0			MBES/SBES/SS/MAG data collection, USBL tracking is good. Usbl head noise(70dB) at transciever from vessel propulsion,
1333	1338	LT										
1338	1408	OL	TM02_006	026.0°	100	195	21.0	31.0	21.0			MBES/SBES/SS/MAG data collection, USBL tracking is good. Usbl head noise(81dB) at transciever from vessel propulsion,
1408	1424	LT										Extended long term to allow vessel to pass
1424	1511	OL	TM02_36	206.0°	100	181	17.0	23.0	13.0			MBES/SBES/SS/MAG data collection, USBL tracking is fair. Usbl head noise(89dB) at transciever
1511	1515	LT										
1515	1538	OL	TM02_029	026.0°	100	184	23.0	29.0	19.0			MBES/SBES/SS/MAG data collection, USBL tracking is good. Usbl head noise(75dB) at transciever
1538	1550	OW										Recover Survey Equipment
1550	1620	IT										At Dock upriver from Canery dock to get water
1620	1645	OW										At Cannery Dock
1645	1830	OW										Refuel Vessel at Cannery Dock
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	18-Jun-2015 Thu Julian Day: 169
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 25
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
49.5% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	John Valikonis
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a
Senior Hydrographer	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	SW
Wx - 1800:	0.3m	5-10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Vessel orientaion for Capt john, review MAR-TRA-012
Pre/Post Job:	None	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0600	0700	OW										Morning Ops Meeting
0700	0730	OW										Vessel Orientation for Replacement Captain
0730	0810	IT										Depart Dock
0810	0840	OW										Survey Equipment deployed
0840	0850	LT										
0850	0920	OL	TM02_020	226.0°	100	187	21.0	23.0	13.0			MBES/SBES/SS/MAG, USBL Tracking ok
0920	0928	LT										
0928	1028	OL	TM02_013	026.0°	100	191	23.0	42.0	32.0			MBES/SBES/SS/MAG, USBL Tracking ok
1028	1053	LT										Extended line turn to adjust connection (cable near potting area was repositioned) on SS towfish,
1053	1116	OL	TM02_21	226.0°	100	188	18.0	20.0	10.0			MBES/SBES/SS/MAG, USBL Tracking ok
1116	1127	LT										
1127	1224	OL	TM02_014	026.0°	100	191	21.0	34.0	24.0			MBES/SBES/SS/MAG, USBL Tracking is fair
1224	1232	LT										
1232	1300	OL	TM02_022	226.0°	100	187	16.0	18.0	8.0			MBES/SBES/SS/MAG, USBL Tracking is good
1300	1310	LT										
1310	1345	OL	TM02_015	026.0°	100	191	21.0	32.0	22.0			MBES/SBES/SS/MAG, USBL Tracking is fair, MBES gain set at 10
1345	1350	E55										SS cable fault
1350	1430	E55										recover SS/Mag to switch to secondary winch
1430	1439	LT										towfish deployed
1439	1535	OL	TM02_023	226.0°	100	187	17.0	20.0	10.0			MBES/SBES/SS/MAG, USBL Tracking is fair, MBES gain set at 6, Using secondary Stbd winch and block
1535	1549	LT										
1549	1614	OL	TM02_016	026.0°	100	191	24.0	26.0	16.0			MBES/SBES/SS/MAG, USBL Tracking is fair, MBES gain set at 6, Using secondary Stbd winch and block
1614	1623	LT										Reterminated primary cable at slip rings
1623	1719	OL	TM02_024	226.0°	100	186	20.0	29.0	19.0			MBES/SBES/SS/MAG, USBL Tracking is fair, MBES gain set at 6, Using secondary Stbd winch and block
1719	1735	OW										Recover Survey Equipment
1735	1825	IT										At Cannery Dock
1825	1830	OW										Tested SS/Mag through primary winch Ok31
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	19-Jun-2015 Fri Julian Day: 170
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 26
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
49.5% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP	#
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	John Valikonis
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	15-20kts	SW
Wx - 1800:	n/a	15-20kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	
Pre/Post Job:	None	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0635	OW									
0635	0700	OW									
0700	0725	IT									
0725	0755	WS									
0755	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Morning Ops meeting
Captain changing engine filters
Depart Cannery Dock
Winds 15kts, Sea conditions are 5-6', WOW, Vessel returning to dock, Forecast is poor for the day.
Alongside Cannery Dock W.O.W, Conducted vessel maintenance

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	20-Jun-2015 Sat Julian Day: 171
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 27
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
49.5% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	John Valikonis
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	5kts	S
Wx - 1800:	n/a	5kts	S
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	No	
Shift Change:	N/A	
Safety:	No	
Pre/Post Job:	No	

TIME		OP	LINE INFORMATION								
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	OW									
1900											

DETAILED SURVEY INFORMATION

Fatigue Day

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	21-Jun-2015 Sun Julian Day: 172
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 28
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
49.5% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	# 502273
Diff. GPS System - Trimble AG130	# 503512
MBES - R2Sonic	# 503633
SSS - Edgetech 4200	# 403274
Mag - SeaSpy	# 403113
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	John Valikonis
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marla Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

Senior Hydrographer	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	5kts	SW
Wx - 1800:	n/a	10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	No	
Shift Change:	N/A	
Safety:	No	
Pre/Post Job:	No	

TIME		OP	LINE INFORMATION								
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	OW									
1900											

DETAILED SURVEY INFORMATION

Fatigue Day

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	22-Jun-2015 Mon Julian Day: 173			CLIENT:	AK LNG
PROSPECT / SITE:	Cook Inlet			JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack			AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly
JOB DAY #:	Day: 29	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	232 584.70 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	577,800.00 56.8% Complete
		NAUTICAL MILE:	6080.0		6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	John Valikonis
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	SSW
Wx - 1800:	n/a	5kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA-009 and 013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting, Vessel checks
0700	0810	IT										Transit to survey site,There are fishing vessels in the survey area deploying fishing gear
0810	0845	OW										deployed survey equipment,AML SVP did not work
0845	0858	OW										Vessel had to circle back around and setup on another line to avoid GillNet fishing vessel and its fishing net
0858	0931	OL	TM02_018	026.0°	100	190	25.0	28.0	18.0			MBES/SBES/SS/MAG
0931	0939	LT										
0939	1014	OL	TM02_025	206.0°	100	186	20.0	31.0	21.0			MBES/SBES/SS/MAG
1014	1019	LT										
1019	1054	OL	TM02_017	026.0°	100	190	22.0	40.0	30.0			MBES/SBES/SS/MAG
1054	1102	LT										
1102	1139	OL	TM02_026	206.0°	100	185	19.0	22.0	12.0			MBES/SBES/SS/MAG, Went offline 23m at SP 127 and came back online at 128 to avoid vessel setting a drift net
1139	1144	LT										Mag hit at SP 167
1144	1228	OL	TM02_019	026.0°	100	188	24.0	36.0	26.0			MBES/SBES/SS/MAG
1228	1235	LT										
1235	1300	OL	TM02_034	206.0°	100	181	17.0	20.0	10.0			MBES/SBES/SS/MAG, CHANGED MBES FROM 380 TO 360KHZ
1300	1307	LT										
1307	1352	OL	TM02_027	026.0°	100	185	21.0	37.0	27.0			MBES/SBES/SS/MAG
1352	1401	LT										
1401	1425	OL	TM02_035	206.0°	100	181	16.0	20.0	10.0			MBES/SBES/SS/MAG
1425	1430	LT										
1430	1509	OL	TM02_028	026.0°	100	185	20.0	35.0	25.0			MBES/SBES/SS/MAG, Went offline at SP 121 avoid debris in water and at SP147
1509	1514	LT										
1514	1543	OL	TM02_037	206.0°	100	180	15.0	18.0	8.0			MBES/SBES/SS/MAG
1543	1600	OW										Recover Survey Equipment
1600	1615	IT										Conduct a Loss of Steering Drill while transiting
1615	1705	IT										At Cannery Dock
1705	1800	OW										Refuel Vessel
1800	1830	OW										Change out fuel filters on vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	23-Jun-2015 Tue Julian Day: 174
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 30
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
56.8% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valkonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	1.2m	15kts	SW
Wx - 1800:	n/a	15kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0700	OW									
0700	0720	OW									
0720	0840	IT									
0840	0920	IT									
0920	1005	OW									
1005	1010	OW									
1010	1035	OW									
1035	1215	IT									
1215	1245	WS									
1245	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Morning Ops meeting and weely safety meeting
Vessel checks
Depart Cannery Dock,Arrive at LNG-02, weather conditions very marginal 3-4ft, will transit to LNG-03
Arrive at LNG-03
scout LNG-03 area and take fixes on Setnet fishery bouys
Deploy MBES and conduct a AML SVP
Check MBES data quality, it is poor, recover equipment
Transit back to dock
Test MBES at dock, OK
At Cannery Dock, Waiting On Weather

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	24-Jun-2015 Wed Julian Day: 175
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 31
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
63.3% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valkonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5-10kts	SW
Wx - 1800:	0.3m	5kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	Yes	Review MAR-TRA-009 &013
Pre/Post Job:	NO	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0805	IT										Depart Cannery Dock for LNG-02
0805	0825	OW										Survey gear deployed and AML Svp conducted
0825	0841	LT										
0841	0908	OL	TM02_030	026.0°	100	184	24.0	29.0	19.0			MBES/SBES/SS/MAG, Seas 1-2', Steered around debris field
0908	0917	LT										
0917	0959	OL	TM02_038	226.0°	100	180	19.0	27.0	17.0			MBES/SBES/SS/MAG, Seas 1-2'
0959	1004	LT										
1004	1033	OL	TM02_031	026.0°	100	183	25.0	26.0	16.0			MBES/SBES/SS/MAG, Seas 1-2'
1033	1040	LT										
1040	1119	OL	TM02_039	226.0°	100	178	19.0	29.0	19.0			MBES/SBES/SS/MAG, Had an error message on SS fish, may indicate a termination problem is developing. At SP 174 lost comms to SS FISH. Susp
1119	1126	OW										SS/MAG on deck
1126	1159	E55										Switch over to Stbd secondary winch
1159	1201	LT										
1201	1237	OL	TM02_032	026.0°	100	183	24.0	25.0	15.0			MBES/SBE/SS/MAG
1237	1243	LT										
1243	1312	OL	TM02_040	206.0°	100	171	19.0	22.0	12.0			MBES/SBE/SS/MAG, Conducted Usvp
1312	1316	LT										
1316	1351	OL	TM02_033	026.0°	100	182	24.0	28.0	18.0			MBES/SBES/SS/MAG
1351	1408	LT										
1408	1424	OL	TM02_045	206.0°	100	140	18.0	19.0	9.0			MBES/SBES/SS/MAG
1424	1427	LT										
1427	1458	OL	TM02_041	026.0°	100	165	22.0	30.0	20.0			MBES/SBES/SS/MAG
1458	1506	LT										
1506	1517	OL	TM02_046	226.0°	100	133	18.0	18.0	8.0			MBES/SBES/SS/MAG
1517	1519	LT										
1519	1546	OL	TM02_042	026.0°	100	159	21.0	27.0	17.0			MBES/SBES/SS/MAG
1546	1605	OW										Recover Survey Gear,
1605	1655	IT										Transit to Cannery Dock
1655	1740	OW										Re-Fuel vessel
1740	1830	OW										Terminate SS Cable
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	25-Jun-2015 Thu Julian Day: 176
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 32
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
65.1% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	var
Wx - 1800:	0.3m	10kts	S
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-009 TransducerDeployment
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0715	OW										Morning ops meeting, pre start checks
0715	0810	OW										Transit to LNG-02
0810	0835	OW										Survey gear deployed, AML SVP Conducted
0835	0849	LT										
0849	0900	OL	TM02_047	206.0°	100	127	18.0	22.0	12.0			MBES/SBES/SS/MAG, SEAS 0.3m, Winds Light and Var
0900	0904	LT										
0904	0923	OL	TM02_043	026.0°	100	152	23.0	22.0	12.0			MBES/SBES/SS/MAG
0923	0940	LT										
0940	0949	OL	TM02_048	206.0°	100	120	19.0	25.0	15.0			MBES/SBES/SS/MAG
0949	0956	LT										
0956	1003	OL	TM02_049	206.0°	100	114	20.0	25.0	15.0			MBES/SBES/SS/MAG
1003	1009	LT										
1009	1013	OL	TM02_050	206.0°	100	108	20.0	25.0	15.0			MBES/SBES/SS/MAG
1013	1017	LT										
1017	1030	OL	TM02_044	026.0°	100	145	23.0	25.0	15.0			MBES/SBES/SS/MAG, Mag Hit at SP 113
1030	1044	LT										
1044	1048	IF	TM02_016_Infill	206.0°	100	111	22.0	32.0	22.0			MBES/SBES/SS/MAG, MBES Infill rerun line due to Hypack JD rollover
1048	1104	LT										
1104	1108	OLC	TM02_039A	206.0°	170	170	24.0	33.0	23.0			MBES/SBES/SS/MAG, SS/Mag rerun on the southern 400m end of line SP170 to SP178
1108	1124	LT										Conducted Usvp
1124	1154	OLC	TM02_005A	026.0°	100	100	25.0	24.0	14.0			MBES/SBES/SS/MAG, MBES rerun for complete line due to an issue with PosMV on original line run
1154	1210	LT										
1210	1244	IF	TM02_MBINFILL	198.0°	100	183	20.0	24.0	14.0			MBES/SBES/SS/MAG, MBES infill line
1244	1300	OW										Recover Gear
1300	1318	IT										Transit to Site 3/4
1318	1335	E101										Stopped to change filter in Stbd ME
1335	1410	IT										TRANSIT to Site 3/4
1410	1510	OW										Scouting
1510	1530	OW										deploy
1530	1535	E50										Recover SS/MAG as there is a cyclic signal in mag data
1535	1555	E50										Test mag could not find issue with cabling
1555	1603	LT										
1603	1608	OL	TM34_001	339.0°	100	109	31.0	44.0	34.0			MBES/SBES/SS/MAG, Mag data has small cyclic artifact in it

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	25-Jun-2015 Thu Julian Day: 176
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 32
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
65.1% Complete
6,900.00 Meters Added

TIME		OP	LINE INFORMATION								
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
1608	1613	LT									
1613	1618	OL	TM34_002	159.0°	100	113	34.0	30.0	20.0		
1618	1624	LT									
1624	1632	OL	TM34_003	339.0°	100	119	32.0	57.0	47.0		
1632	1655	OW									
1655	1805	IT									
1805	1830	OW									
1830											

DETAILED SURVEY INFORMATION

MBES/SBES/SS/MAG. Mag data has a small cydic artifact in it

MBES/SBES/SS/MAG. Mag data has a small cydic artifact in it
Recover equipment, Conduct a Usvp
Transit to Cannery Dock
Test termination on primary SS Cable and install Yale grip

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	26-Jun-2015 Fri Julian Day: 177
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 33
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.70 Kilometers
65.1% Complete
6,900.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	1.0m	15kts	SSW
Wx - 1800:	n/a	15kts	SSW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA-013 Vessel Fueling
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0600	0710	OW										Morning ops meeting, pre start checks
0710	0830	IT										Depart Cannery Dock for LNG34
0830	0840	OW										MBES Deployed
0840	0915	OW										Standing by while tanker Overseas Boston and her assisting tug leaves dock
0915	0925	OW										Conducted AML SVP
0925	0945	OW										Deploy SS/MAG and USBL
0945	1028	LT										Transit to SOL of Line TM34_004
1028	1043	OLC	TM34_004	159.0°	100	100	30.0	44.0	34.0		DNP	MBES/SBES/SS/MAG, Seas are a 3'-4' choppy, data quality poor, aborted line
1043	1105	OW										Recover Survey Equipment
1105	1240	IT										Transit to Cannery Dock
1240	1420	WS										Refuel Vessel
1420	1830	WS										Waiting on Weather at Dock
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	27-Jun-2015 Sat Julian Day: 178
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 34
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.95 Kilometers
72.3% Complete
8,750.00 Meters Added
1,600.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	10kts	NE
Wx - 1800:	0.5m	10kts	E
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TAR-012 Towfish Deployment/Recovery
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0705	OW										Morning Ops meeting, Pre-start checks
0705	0820	IT										Transit to LNG-34
0820	0850	OW										Deploy survey gear
0850	0854	LT										
0854	0909	OL	TM34_004A	159.0°	100	135	28.0	34.0	24.0			MBES/SBES/SS/MAG, Seas 0.2m, Winds Light
0909	0918	LT										
~~0918~~	~~0939~~	~~OL~~	~~TM34_005~~	~~339.0°~~	~~100~~	~~148~~	~~31.0~~	~~37.0~~	~~27.0~~			~~MBES/SBES/SS/MAG~~
0938	0950	LT										
0950	1021	OL	TM34_006	159.0°	100	169	38.0	56.0	46.0			MBES/SBES/SS/MAG
1021	1026	LT										
1026	1054	OL	TM34_007	339.0°	100	178	33.0	30.0	20.0			MBES/SBES/SS/MAG
1054	1108	LT										
1108	1158	OL	TM34_008	159.0°	100	178	41.0	78.0	68.0			MBES/SBES/SS/MAG
1158	1202	LT										
1202	1222	OL	TM34_009	339.0°	100	178	32.0	32.0	22.0			MBES/SBES/SS/MAG
1222	1239	LT										
1239	1340	OL	TM34_010	159.0°	100	178	43.0	82.0	72.0			MBES/SBES/SS/MAG, Going against current only making 1.5kts
1340	1345	LT										
1345	1412	OL	TM34_011	339.0°	100	178	30.0	28.0	18.0			MBES/SBES/SS/MAG
1412	1419	LT										
1419	1458	OL	TM34_012	159.0°	100	178	45.0	83.0	73.0			MBES/SBES/SS/MAG
1458	1502	LT										
1502	1538	OL	TM34_013	339.0°	100	178	25.0	23.0	13.0			MBES/SBES/SS/MAG
1538	1542	LT										
1542	1608	OL	TM34_014	159.0°	100	158	46.0	71.0	61.0			MBES/SBES/SS/MAG, Ended line early to avoid setnet fishing gear
1608	1612	LT										
1612	1643	OL	TM34_015	339.0°	160	218	15.0	18.0	8.0			MBES/SBES/SS/MAG, Ended line early to avoid setnet fishing gear
1643	1700	OW										Recover survey Equipment
1700	1830	IT										Transit to Cannery Dock
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	27-Jun-2015 Sat Julian Day: 178
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 34
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

584.95 Kilometers
72.3% Complete
8,750.00 Meters Added
1,600.00 Meters Deleted

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	TM34_004A		133	135						Added mileage for run in/out
		AM	TM34_005		145	148						Added mileage for run in/out
		AM	TM34_006		165	169						Added mileage for run in/out
		AM	TM34_007		174	178						Added mileage for run in/out
		AM	TM34_008		174	178						Added mileage for run in/out
		AM	TM34_009		174	178						Added mileage for run in/out
		AM	TM34_010		174	178						Added mileage for run in/out
		AM	TM34_011		174	178						Added mileage for run in/out
		AM	TM34_012		174	178						Added mileage for run in/out
		AM	TM34_013		174	178						Added mileage for run in/out
		DM	TM34_014		158	174						Deleted mileage for SetNet fishing gear
		DM	TM34_015		158	174						Deleted mileage for SetNet fishing gear

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	28-Jun-2015 Sun Julian Day: 179
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 35
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

587.35 Kilometers
77.1% Complete
11,150.00 Meters Added
1,600.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.5m	10-15kts	E
Wx - 1800:	n/a	10-15kts	ENE
Wx - 2400:	n/a	n/a	na/

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox Talk
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-006 and 013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0705	OW										Morning Ops meeting, pre-start checks
0705	0820	IT										Transit to TM05
0820	0855	OW										Deploy Survey Equipment
0855	0909	LT										
0909	0927	OL	TM05_056	211.0°	100	156	26.0	25.0	15.0			MBES/SBES/SS/MAG Seas 0.3M, Winds 10kts E. Mag Hit at SP 109 Near charted Pipeline
0927	0934	LT										
~~0934~~	~~1003~~	~~OL~~	~~TM05_062~~	~~031.0°~~	~~100~~	~~152~~	~~10.0~~	~~27.0~~	~~17.0~~			~~MBES/SBES/SS/MAG Seas 0.3M,~~
1003	1009	LT										
1009	1036	OL	TM05_055	211.0°	100	156	26.0	30.0	20.0			MBES/SBES/SS/MAG Seas 0.3M, Conducted Usvp
1036	1042	LT										
1042	1103	OL	TM05_061	031.0°	100	153	18.0	22.0	12.0			MBES/SBES/SS/MAG Seas 0.3M
1103	1110	LT										
1110	1156	OL	TM05_054	211.0°	100	157	22.0	23.0	13.0			MBES/SBES/SS/MAG Seas 0.5M, There is floatsom in the water.
1156	1201	LT										
1201	1219	OL	TM05_060	031.0°	100	153	20.0	21.0	11.0			MBES/SBES/SS/MAG Seas 0.5M
1219	1231	LT										
1231	1318	OL	TM05_053	211.0°	100	157	25.0	33.0	23.0			MBES/SBES/SS/MAG Seas 0.75M
1318	1322	LT										
1322	1340	OL	TM05_059	031.0°	100	154	22.0	23.0	13.0			MBES/SBES/SS/MAG Seas 0.75-1.0M, WINDS 10-15KTS ENE
1340	1358	LT										
1358	1437	OL	TM05_052	211.0°	100	158	23.0	33.0	23.0			MBES/SBES/SS/MAG Seas 0.75-1.0M, WINDS 10-15KTS ENE
1437	1440	LT										
1440	1500	OL	TM05_058	031.0°	100	154	23.0	22.0	12.0			MBES/SBES/SS/MAG Seas 0.75-1.0M, WINDS 10-15KTS ENE
1500	1520	OW										Recover survey gear
1520	1640	IT										At Cannery Dock
1640	1830	OW										Fueling Vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	28-Jun-2015 Sun Julian Day: 179
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 35
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

587.35 Kilometers
77.1% Complete
11,150.00 Meters Added
1,600.00 Meters Deleted

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	TM05_056		156	160						Added Mileage for run in/out
		AM	TM05_062		152	156						Added Mileage for run in/out
		AM	TM05_055		156	161						Added Mileage for run in/out
		AM	TM05_061		153	158						Added Mileage for run in/out
		AM	TM05_054		157	162						Added Mileage for run in/out
		AM	TM05_060		153	158						Added Mileage for run in/out
		AM	TM05_053		157	162						Added Mileage for run in/out
		AM	TM05_059		154	159						Added Mileage for run in/out
		AM	TM05_052		158	164						Added Mileage for run in/out
		AM	TM05_058		154	158						Added Mileage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	29-Jun-2015 Mon Julian Day: 180
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 36
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

589.35 Kilometers
82.3% Complete
13,150.00 Meters Added
1,600.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	Katie Conrad
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.5m	10kts	NE
Wx - 1800:	0.3m	5kts	NE
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review TIA-009, Katie Conrad received Vessel Orientation
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0715	OW										Morning Ops meeting, Pre start checks
0715	0850	IT										Transit to TM05
0850	0920	OW										Deploy Survey Equipment
0920	0938	LT										
0938	0956	OL	TM05_052	211.0°	100	158	18.0	20.0	10.0			MBES\SBES\SS\MAG, seas 0.3m, winds 5-10kts
0956	1003	LT										
~~1003~~	~~1030~~	~~OL~~	~~TM05_057~~	~~031.0°~~	~~100~~	~~155~~	~~17.0~~	~~22.0~~	~~12.0~~			MBES\SBES\SS\MAG, *There is seismic activity in* our survey area. 3 vessels are involved.
1039	1044	LT										
1044	1107	OL	TM05_050	211.0°	100	159	18.0	20.0	10.0			MBES\SBES\SS\MAG
1107	1124	LT										Extended line turn to move away from debris in water as there is large are with floatsom in the water
1124	1156	OL	TM05_016	031.0°	100	174	18.0	20.0	10.0			MBES\SBES\SS\MAG, At SP 140 vessel encountered another large floatsom filled area
1156	1203	LT										Extended line turn to move away from debris in water as there is large are with floatsom in the water and arother vesseL in the area
1203	1257	OL	TM05_023	211.0°	100	176	27.0	41.0	31.0			MBES\SBES\SS\MAG, Vessel back into floatsom are at SP 120, Exited debris field at SP 136
1257	1304	LT										Extended line turn to move to west side of site to avoid floatsom in the water
1304	1324	OL	TM05_010	031.0°	100	162	24.0	22.0	12.0			MBES\SBES\SS\MAG , Current pushing vessel, little steerageway.vessel crabbing downline
1324	1337	LT										
1337	1448	OL	TM05_019	211.0°	100	176	29.0	50.0	40.0			MBES\SBES\SS\MAG, Went offline at SP 110 came back onlin at SP 114 to a unknown avoid bouy/rope on line
1448	1455	LT										POSMV stopped logging at EOL accidently,Processsing will have to evaluate the line
1455	1519	OL	TM05_011A	031.0°	100	166	27.0	29.0	19.0			MBES\SBES\SS\MAG, Vessel went offline at SOL due to current but regained it. Vessl does have a high crab angle at times on line due current
1519	1530	LT										
1530	1632	OL	TM05_021	211.0°	100	177	32.0	42.0	32.0			MBES\SBES\SS\MAG, Hypack rollover at 16:00,
1632	1650	OW										Recovery Survey Equipment
1650	1830	IT										Transit To Cannery Dock
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	29-Jun-2015 Mon Julian Day: 180
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 36
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

589.35 Kilometers
82.3% Complete
13,150.00 Meters Added
1,600.00 Meters Deleted

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	TM05_052		158	161						Added milage for Run in/out
		AM	TM05_057		155	159						Added milage for Run in/out
		AM	TM05_050		159	165						Added milage for Run in/out
		AM	TM05_016		174	178						Added milage for Run in/out
		AM	TM05_023		176	181						Added milage for Run in/out
		AM	TM05_010		162	164						Added milage for Run in/out
		AM	TM05_019		176	180						Added milage for Run in/out
		AM	TM05_011		166	171						Added milage for Run in/out
		AM	TM05_21		177	184						Added milage for Run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	30-Jun-2015 Tue Julian Day: 181
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 37
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

601.60 Kilometers
84.1% Complete
15,000.00 Meters Added
1,600.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	10kts	SW
Wx - 1800:	n/a	10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-012 and 013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0730	OW										Morning ops meeting, weekly safety meeting
0730	0855	OW										Transit to Survey site TM05
0855	0945	LT										Survey Equipment deployed, Conducted AML SVP
0945	1056	OL	TM05_012	031.0°	100	170	24.0	42.0	32.0			MBES/SBES/SS/MAG, Seas 0.3m, Winds 5kts SW
1056	1105	LT										
1105	1120	OL	TM05_005	211.0°	100	143	21.0	20.0	10.0			MBES/SBES/SS/MAG, Seas 0.3m, Winds 5kts SW, There was some debris on the water but not as much as yesterday
1120	1130	LT										*Fishing buoys surfaced at end of line 005*
1130	1205	OL	TM05_013	031.0°	100	171	22.0	37.0	27.0			MBES/SBES/SS/MAG, Sonarwhiz crashed prior to start of line. Conducted Usvp. Can feel guns from Gun boat.
1205	1211	LT										
1211	1234	OL	TM05_006	211.0°	100	147	26.0	47.0	37.0			MBES/SBES/SS/MAG, There was debris on the line.
1234	1241	LT										
1241	1250	OL	TM05_001	031.0°	100	128	24.0	34.0	24.0			MBES/SBES/SS/MAG, There was debris on the line and to go around some at SP120
1250	1258	LT										
1258	1422	OL	TM05_007	211.0°	100	151	27.0	45.0	35.0			MBES/SBES/SS/MAG, Conducted a Usvp, only the down portion of cast was logged but it is a good cast, Naking 1.5kts against current
1422	1427	LT										
1427	1438	OL	TM05_002	031.0°	100	131	26.0	28.0	18.0			MBES/SBES/SS/MAG, Vessel crabbing downline 30deg from line hdg
1438	1444	LT										
1444	1526	OL	TM05_03	211.0°	100	135	31.0	66.0	56.0			MBES/SBES/SS/MAG,
1526	1540	OW										Recover Survey Equipment
1540	1552	IT										Transit to Cannery Dock
1552	1700	IT										Stop and restart POSMV for leap second rollover at 4pm(0000UTC)
1700	1830	OW										Fuel Vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	30-Jun-2015 Tue Julian Day: 181
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 37
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

601.60 Kilometers
84.1% Complete
15,000.00 Meters Added
1,600.00 Meters Deleted

TIME		OP	LINE INFORMATION									DNP
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)			
		AM	TM05_012		170	173						
		AM	TM05_005		143	147						
		AM	TM05_013		171	177						
		AM	TM05_006		147	152						
		AM	TM05_001		128	133						
		AM	TM05_007		151	155						
		AM	TM05_002		131	136						
		AM	TM05_003		135	140						

DETAILED SURVEY INFORMATION

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	01-Jul-2015 Wed Julian Day: 182
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 38
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	232

601.60 Kilometers
84.5% Complete
15,000.00 Meters Added
1,600.00 Meters Deleted

GEOPHYSICAL EQUIPMENT

EQUIP	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.5m	5-10kts	SW
Wx - 1800:	n/a	10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Fire drill and review MAR-TRA-005
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting, Vessel pre-start checks
0700	0730	IT										Depart Cannery Dock for Site TM05
0730	0745	IT										Vessel slowed speed to change out fuel filter
0745	0800	SM										Weekly Drill, Fire drill
0800	0835	IT										
0835	0905	OW										Survey Gear deploy and an AML SVP Conducted
0905	0917	LT										
0917	1013	OL	TM05_014	031.0°	100	150	21.0	47.0	37.0			MBES/SBES/SSS/MAG, Seas 0.3m Winds 8kts S, Speed 1.8kts, Aborted line due to cable slipping winch drum.
1013	1150	E65										Recovered towfish and set cable correctly on the primary winch. During re-deployment however cable jumped sheave wheel and became wedged and could not be freed.
1150	1155	LT										
1155	1156	OW	TM05_022	211.0°	100	105	22.0	27.0	17.0		DNP	Abort line due to loss of comms to sidescan fish
1156	1225	E65										Termination on fish failed, recover survey gear to go back to dock to facilitate repairs to cables
1225	1410	E65										transit to dock
1410	1830	E65										Re-terminated the secondary winch cable, and replaced sheave block on primary winch.
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	02-Jul-2015 Thu Julian Day: 183
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 39
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

601.05 Kilometers
89.2% Complete
16,950.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	S
Wx - 1800:	0.3m	5kts	S
Wx - 2400:	n/a	n/a	na/

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:		Kelly Power
Toolbox:	X	JHA-Toolbox Talk
Shift Change:		
Safety:	X	Review MAR-TRA-012
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0715	OW										Morning Ops Meeting, pre-start checks
0715	0825	OW										Transit to TM05
0825	0915	OW										Survey Gear deployed, AML SVP Conducted
0915	0937	LT										
0937	1026	OL	TM05_004	031.0°	100	139	24.0	42.0	32.0			MBES\SBES\SS\MAG, Going against 4kts of current, Sea 0.3m, Winds 5kts S, Debris field at SP124
1026	1037	LT										
~~1037~~	~~1050~~	OL	TM05_009	211.0°	100	154	25.0	27.0	17.0			MBES\SBES\SS\MAG, Going with 1kts of current, Did not do 100m runout due to unknown bouys in water
1050	1056	LT										
1056	1057	LT										MBES\SBES\SS\MAG, Going against 4kts of current, Conducted Usvp, At SP 150 entered a debris field
1057	1211	OL	TM05_015	031.0°	100	173	18.0	26.0	16.0			
1211	1228	OL	TM05_009	211.0°	100	158	27.0	25.0	15.0			MBES\SBES\SS\MAG, Going with 2kts of current, Conducted Usvp, Did not do 100m runout due to unknown bouys in water
1228	1235	LT										
1235	1312	OL	TM05_014A	031.0°	100	172	19.0	28.0	18.0			MBES\SBES\SS\MAG, SonarWhiz shut down and SP107 and restarted at SP108, Discover still logging and we have this data from Line TM05_014
1312	1317	LT										
1317	1355	OL	TM05_017	211.0°	100	175	26.0	25.0	15.0			MBES\SBES\SS\MAG, At SP 104 Raised towfish as vessel passed Unknown cluster of of 3 bouys on/near line TM05_018,
1355	1359	LT										The current position of bouys is 200m south of last fixed position. AT sp144 sped up to pass gunboat
1359	1422	OL	TM05_024	031.0°	100	175	10.0	12.0	6.0			MBES\SBES\SS\MAG,
1422	1432	LT										
1432	1634	OL	TM05_020	211.0°	100	175	29.0	41.0	31.0			MBES\SBE\SS\MAG, Only making 0.5kts to a 1kt against current, Vessel is having trouble maintaining hdg and speed. Usvp conducted.
1634	1650	OW										Recover survey equipment
1650	1805	IT										Transit to dock
1805	1830	OW										Backup data, create a line for the Nav system
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	02-Jul-2015 Thu Julian Day: 183
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 39
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

601.05 Kilometers
89.2% Complete
16,950.00 Meters Added
4,100.00 Meters Deleted

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
		AM	TM05_004		139	144					
		AM	TM05_006		154	157					
		AM	TM05_015		173	179					
		AM	TM05_009		158	161					
		AM	TM05_014A		172	177					
		AM	TM05_017		177	179					
		AM	TM05_024		175	181					
		AM	TM05_020		175	184					
		DM	TM05_014		100	150					

DETAILED SURVEY INFORMATION

Added mileage for run in/out
Added mileage for run in/out
Added mileage for run in/out
Added mileage for run in/out
Added mileage for run in/out
Added mileage for run in/out
Added mileage for run in/out
Added mileage for run in/out
Added mileage for run in/out
Deleted mileage for TM05_014 as the line was re-ran completely today

Alaska LNG

FUGRO

FUGRO
SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	03-Jul-2015 Fri Julian Day: 184
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 40
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

602.75 Kilometers
93.4% Complete
18,650.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.1m	Light	Var.
Wx - 1800:	n/a	Light	Var.
Wx - 2400:	n/a	n/a	n/a

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA/Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA-010 & 013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0705	OW										Morning Ops Meeting, Vessel pre-start checks
0705	0820	IT										Transit to Site
0820	0850	OW										Deploy Survey gear, Conducted AML SVP
0850	0855	LT										
0855	1059	OL	TM05_025	031.0°	100	175	16.0	18.0	8.0			MBES/SBES/SS/MAG Seas: 0.1m Winds: Light, Going against Currentof ~4 kts, Vessel speed 0.5kts-1kt
1059	1105	LT										
1105	1121	OL	TM05_032	211.0°	100	170	20.0	21.0	11.0			MBES/SBES/SS/MAG Seas: 0.1m Winds: Light,
1121	1130	LT										
1130	1244	OL	TM05_026	031.0°	100	174	11.0	18.0	8.0			MBES/SBES/SS/MAG Seas: 0.1m Winds: Light, Conducted Usvp and cast was not good
1244	1248	LT										
1248	1308	OL	TM05_033	211.0°	100	170	19.0	22.0	12.0			MBES/SBES/SS/MAG Seas: 0.1m Winds: Light, Conducted Usvp, down cast only but is valid
1308	1314	LT										
1314	1359	OL	TM05_027	031.0°	100	174	5.0	20.0	10.0			MBES/SBES/SS/MAG Seas: 0.1m Winds: Light,Sowed vessel at SP 146 to SAE gun boat to pass
1359	1404	LT										
1404	1434	OL	TM05_034	211.0°	100	169	19.0	23.0	13.0			MBES/SBES/SS/MAG Seas: 0.1m Winds: Light,
1434	1438	LT										
1438	1458	OL	TM05_028	031.0°	100	173	6.0	22.0	12.0			MBES/SBES/SS/MAG Seas: 0.1m Winds: Light,
1458	1515	OW										Recover Survey Gear
1515	1630	IT										Transit to Dock
1630	1830	OW										Refuel Vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	03-Jul-2015 Fri Julian Day: 184
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 40
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

602.75 Kilometers
93.4% Complete
18,650.00 Meters Added
4,100.00 Meters Deleted

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	ESP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	TM05_025		175	178						Added mileage for run in/out
		AM	TM05_032		170	176						Added mileage for run in/out
		AM	TM05_026		174	179						Added mileage for run in/out
		AM	TM05_033		170	174						Added mileage for run in/out
		AM	TM05_027		174	179						Added mileage for run in/out
		AM	TM05_034		169	175						Added mileage for run in/out
		AM	TM05_028		173	178						Added mileage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	04-Jul-2015 Sat Julian Day: 185
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 41
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

602.75 Kilometers
93.4% Complete
18,650.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT

EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	n/a	n/a
Wx - 1800:	n/a	n/a	n/a
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:		
Shift Change:		
Safety:		
Pre/Post Job:		

LINE INFORMATION

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0000	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Rest Day

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Jul-2015 Sun Julian Day: 186
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 42
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

602.75 Kilometers
93.4% Complete
18,650.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT

EQUIP	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valkonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	n/a	n/a
Wx - 1800:	n/a	n/a	n/a
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:		
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Rest Day

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	06-Jul-2015 Mon Julian Day: 187		CLIENT:	AK LNG	
PROSPECT / SITE:			JOB DESCRIPTION:	0	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	LNG Sites	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 43	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	214	594.60 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	577,800.00	95.2% Complete
		NAUTICAL MILE: 6080.0			20,900.00 Meters Added
					4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.1m	Light	Var.
Wx - 1800:	0.1m	Light	Var.
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA-012
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting, Vessel Pre-start checks
0700	0810	IT										Transit to TM-05
0810	0845	OW										Deployed Survey Gear and Comducted an AML SVP
0845	0848	LT		211.0°								
0848	0918	OL	TM05_035	211.0°	179	252	25.0	43.0	33.0			MBES/SBES/SS/MAG Seas:0.1m Winds: Light, Hypack is not seeing Mag data but it is being recorded in sonarwhiz and sealink
0918	0941	LT										Extended line turn to get Mag data string into Hypack
0941	1019	OL	TM05_020	031.0°	100	172	17.0	20.0	10.0			MBES/SBES/SS/MAG
1019	1023	LT										
1023	1047	OL	TM05_036	211.0°	100	168	23.0	24.0	14.0			MBES/SBES/SS/MAG, Conducted u-svp at 1035,Cast was not good, Conducted a 2nd one at 1045 and cast was valid
1047	1054	LT										
1054	1211	OL	TM05_030	031.0°	100	172	15.0	19.0	9.0			MBES/SBES/SS/MAG,
1211	1214	LT										
1214	1230	OL	TM05_031	211.0°	100	171	24.0	24.0	14.0			MBES/SBES/SS/MAG, Seas; 0.1m Winds: Light,
1230	1244	LT										
1244	1430	OL	TM05_022A	031.0°	100	177	8.0	23.0	13.0			MBES/SBES/SS/MAG, Seas; 0.1m Winds: Light, Conducted Usvp
1430	1437	LT										
1437	1455	OL	TM05_037	211.0°	100	167	17.0	20.0	10.0			MBES/SBES/SS/MAG, Seas; 0.1m Winds: Light
1455	1501	LT										
1501	1551	OL	TM05_043	031.0°	100	164	11.0	15.0	5.0			MBES/SBES/SS/MAG, Seas; 0.1m Winds: Light, Conducted u-SVP at 1530 downcast only
1551	1555	LT										
1555	1622	OL	TM05_038	211.0°	100	167	9.0	28.0	18.0			MBES/SBES/SS/MAG, Seas; 0.1m Winds: Light,
1622	1625	LT										
1625	1647	OL	TM05_044	031.0°	100	163	11.0	16.0	6.0			MBES/SBES/SS/MAG, Seas; 0.1m Winds: Light,
1647	1700	OW										Recover Survey Gear
1700	1810	IT										Transit to Dock
1810	1830	OW										
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	06-Jul-2015 Mon Julian Day: 187			CLIENT:	AK LNG
PROSPECT / SITE:				JOB DESCRIPTION:	0
NAV. SYSTEM:	Hypack			AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly
JOB DAY #:	Day: 43	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	214
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	577,800.00
		NAUTICAL MILE:	6080.0		

594.60	Kilometers
95.2%	Complete
20,900.00	Meters Added
4,100.00	Meters Deleted

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	TM05_034	211.0°	248	252						Added mileage for run in/out
		AM	TM05_029	031.0°	172	178						Added mileage for run in/out
		AM	TM05_036	211.0°	168	172						Added mileage for run in/out
		AM	TM05_030	031.0°	172	176						Added mileage for run in/out
		AM	TM05_031	211.0°	171	176						Added mileage for run in/out
		AM	TM05_022A	031.0°	177	181						Added mileage for run in/out
		AM	TM05_037	211.0°	167	169						Added mileage for run in/out
		AM	TM05_043	031.0°	164	169						Added mileage for run in/out
		AM	TM05_038	211.0°	167	173						Added mileage for run in/out
		AM	TM05_044	031.0°	163	168						Added mileage for run in/out
			Site TM01		001	686						Deleted 34.3 km from Line Km shot total

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	07-Jul-2015 Tue Julian Day: 188
PROSPECT / SITE:	0
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 44
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	0
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

596.65 Kilometers
99.9% Complete
22,950.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.5m	10kts	ESE
Wx - 1800:	1.0m	15kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	WeeklySafety Meeting, Review MAR-TRA-001
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0735	OW										Morning Ops meeting, Weekly Safety Meeting,
0735	0850	IT										Transit to site TM05
0850	0920	OW										Deploy Survey equipment and Conduct an AML SVP
0920	0924	LT										
0924	0959	OL	TM05_045	211.0°	100	162	25.0	39.0	29.0			MBES/SBES/SS/MAG Seas; 0.3m Winds: 10 WSW
0959	1003	LT										
1003	1031	OL	TM05_030	031.0°	100	166	10.0	21.0	11.0			MBES/SBES/SS/MAG Seas; 0.3m Winds: 10 WSW
1031	1037	LT										
1037	1105	OL	TM05_046	211.0°	100	162	24.0	25.0	15.0			MBES/SBES/SS/MAG Seas; 0.4m Winds: 10 ESE
1105	1109	LT										
1109	1142	OL	TM05_040	031.0°	100	166	16.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 0.4m Winds: 10 ESE, Conducted usvp at 11:15
1142	1146	LT										
1146	1206	OL	TM05_047	211.0°	100	161	22.0	22.0	12.0			MBES/SBES/SS/MAG Seas; 0.4m Winds: 10 ESE, At SP 130 Turned off vessel sounder as it was interferrng with SS record
1206	1212	LT										
1212	1405	OL	TM05_041	031.0°	100	165	16.0	18.0	8.0			MBES/SBES/SS/MAG Seas; 0.6m Winds: 10 ESE, At SP 120 entered into debris field, Conducted Usvp at 13:15
1405	1411	LT										
1411	1429	OL	TM05_048	211.0°	100	161	19.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 0.7m Winds 10kts S, SS record shows evidence of tugging but data still good
1429	1435	LT										
1435	1547	OL	TM05_042	031.0°	100	164	13.0	16.0	6.0			MBES/SBES/SS/MAG Seas; 0.7m Winds 10kts S, Slow vessel at SP102 due to noise on MBES, SS record shows some thermoclines at SP105
1547	1552	LT										Conducted a USVP at 15:30
1552	1614	OL	TM05_047	211.0°	100	161	17.0	17.0	7.0			MBES/SBES/SS/MAG Seas; 0.7m Winds 10kts S, Seas are choppy and affecting data qaulity
1614	1630	OW										Recover survey gear
1630	1805	IT										Transit to Cannery Dock
1805	1830	OW										
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	07-Jul-2015 Tue Julian Day: 188
PROSPECT / SITE:	D
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 44
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	O
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214 596.65 Kilometers
	99.9% Complete
	22,950.00 Meters Added
	4,100.00 Meters Deleted

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	TM05_045	211.0°	162	166						
		AM	TM05_039	031.0°	166	172						
		AM	TM05_046	211.0°	162	166						
		AM	TM05_040	031.0°	166	170						
		AM	TM05_047	211.0°	161	165						
		AM	TM05_041	031.0°	165	170						
		AM	TM05_048	211.0°	161	166						
		AM	TM05_042	031.0°	164	169						
		AM	TM05_047	211.0°	161	165						

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	08-Jul-2015 Wed Julian Day: 189
PROSPECT / SITE:	TM05
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 45
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

596.65 Kilometers
99.9% Complete
22,950.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	Doug Bowlus
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	1 to 1.2	10kt	SSW
Wx - 1800:	1	10kt	SSW
Wx - 2400:	n/a	n/a	n/a

SE Reporting (Place an "x" in the box, with brief descriptio

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA / Toolbox
Shift Change:		
Safety:	X	Vessel Induction. Reviewed MAR-TRA-013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0725	OW									
0725	0840	IT									
0840	0935	OW									
0935	0940	LT									
0940	1000	OW									
1000	1135	WS									
1135	1530	WS									
1530	1610	WS									
1610	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Morning ops meeting. Dockside checks.
Transit to TM05
On site. Deploy survey equipment and conduct AML SVP.

3 to 4 foot seas affecting data quality. Retrieve gear.
Transit back to dock.

Fueling toolbox talk. Fuel vessel.

ver 7.22.2015-A (Alaska)

DATE:	08-Jul-2015 Wed Julian Day: 189	CLIENT:	AK LNG
PROSPECT / SITE:	0	JOB DESCRIPTION:	0
NAV. SYSTEM:	Hypack	AREA & BLOCK:	LNG Sites
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 45	No. of SURVEY LINES:	214
CRP TO STERN:	0.00 N/A		

596.65 Kilometers
99.9% Complete
22,950.00 Meters Added
4,100.00 Meters Deleted

TIME		OP CODE	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO		LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	09-Jul-2015 Thu Julian Day: 190
PROSPECT / SITE:	TM05
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 46
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

596.85 Kilometers
100.6% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:			
Wx - 1200:	1 to 1.2	10-15 kts	SSW
Wx - 1800:	0.5	5-10 kts	SSW
Wx - 2400:			

SE Reporting (Place an "x" in the box, with brief descriptio

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Reviewed MAR-TRA-009
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0720	OW										Morning ops meeting. Dockside checks.
0720	0850	IT										Transit to TM05.
0850	0935	OW										On site. Deploy equipment and conduct AML SVP.TRA-009
0935	0943	LT										
0943	1001	OW	TM05_020A	031.0°	100	181	20.0	22.0	12.0			MBES/SBES/SS/MAG Re-run. Seas; 1.0m Winds: 12kt SSW. Vessel speed on line increased due to tidal current.
1001	1036	LT										SSS data quality degraded with 210 degree heading. Switch to Multibeam infill lines.
1036	1044	OW	TM05_INFILL_000	210.0°	100	112	22.0	32.0	22.0			MBES/SBES/SS/MAG Infill. Seas; 1.0m Winds: 12kt SSW.
1044	1112	LT										
1112	1137	OL	TM05_018	031.0°	100	180	25.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 0.8m Winds: 13kt SSW. 1125 MVP taken.
1137	1152	LT										SSS data quality still degraded with 210 degree heading. Run multibeam re-run line.
1152	1242	OW	TM05_035A	210.0°	100	174	25.0	28.0	18.0			MBES/SBES/SS/MAG Re-run. Seas; 0.8m Wirds: 12kt SSW. Data quality marginal.
1242	1251	LT										
1251	1322	OW	TM05_019A	031.0°	100	181	23.0	22.0	12.0			MBES/SBES/SS/MAG Re-run. Seas; 1.0m Wirds: 9.9kt SSW.
1322	1358	LT										Data quality is not acceptable heading 210 degrees. 1345 MVP Taken.
1358	1409	OW	TM05_INFILL_004	007.0°	100	121	28.0	43.0	33.0			MBES/SBES/SS/MAG Infill. Seas; 0.5m Winds. 8kt SSW.
1409	1417	LT										
1417	1458	OW	TM05_INFILL_005	031.0°	100	134	25.0	33.0	23.0			MBES/SBES/SS/MAG Infill. Seas; 0.5m Winds: 7kt SSW.
1458	1519	LT										
1519	1559	OW	TM05_040A	031.0°	100	128	14.0	17.0	7.0			MBES/SBES/SS/MAG Re-run. Seas; 0.5m Wirds: 9kt SSW. 15:45 MVP Taken.
1559	1608	LT										Break line for UTC roll-over.
1608	1642	OW	TM05_049A_0001	031.0°	100	139	-	-	-			MBES/SBES/SS/MAG Re-run (CONT). Seas; 0.5m Winds: 7kt SSW.
1642	1700	OW										Recover survey gear
1700	1815	IT										Transit to dock.
1815	1830	OW										
1830												

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	09-Jul-2015 Thu Julian Day: 190
PROSPECT / SITE:	TM05
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 46
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

596.85 Kilometers
100.6% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

TIME		OP	LINE INFORMATION								
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP
		AM	TM05_18	031.0°	176	180					

DETAILED SURVEY INFORMATION

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	10-Jul-2015 Fri Julian Day: 191		CLIENT:	AK LNG	
PROSPECT / SITE:	PL001		JOB DESCRIPTION:	Seafloor Mapping	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	Pipeline	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 1	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	484	610.60 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	606,000.00	2.7% Complete
		NAUTICAL MILE: 6080.0			4,600.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lanve Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.2	< 5kts	SW
Wx - 1800:	0.2	5 kts	SW
Wx - 2400:	n/a	n/a	n/a

SE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox Talk
Shift Change:		
Safety:	X	Review MAR-TRA-010
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0730	OW										Morning meeting. Vessel pre-start checks. JHA Toolbox.
0730	0805	WS										Waiting on tide to rise.
0805	0930	IT										Transit to PL001.
0930	0955	OW										Deploy survey gear
0955	1020	OW										Troubleshooting multibeam interference.
1020	1042	LT										
1042	1102	OL	PL01_001	210.0°	100	110	21.0	22.0	12.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt SW.
1102	1106	LT										
1106	1110	OL	PL01_007	030.0°	100	111	25.0	25.0	15.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt SW.
1110	1117	LT										
1117	1127	OL	PL01_002	210.0°	100	110	22.0	28.0	18.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt SW.
1127	1130	LT										
1130	1134	OL	PL01_005	030.0°	100	111	25.0	24.0	14.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt SSW.
1134	1143	LT										
1143	1152	OL	PL01_003	210.0°	100	110	23.0	29.0	19.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt SW. 11:45 MVP Taken.
1152	1154	LT										
1154	1159	OL	PL01_006	030.0°	100	111	25.0	26.0	16.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt SW.
1159	1204	LT										
1204	1211	OL	PL01_004	210.0°	100	110	24.0	31.0	21.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt SW.
1211	1215	LT										
1215	1219	OL	PL01_008	030.0°	100	110	26.0	30.0	20.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt SW.
1219	1225	LT										
1225	1233	OL	PL01_012	210.0°	100	110	24.0	29.0	19.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt W.
1233	1239	LT										
1239	1244	OL	PL01_009	030.0°	100	111	26.0	26.0	16.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt WSW.
1244	1251	LT										
1251	1255	OL	PL01_013	210.0°	100	110	24.0	31.0	21.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt WSW.
1255	1300	LT										
1300	1305	OL	PL01_010	030.0°	100	111	26.0	26.0	16.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt W.
1305	1311	LT										
1311	1319	OL	PL01_014	210.0°	100	111	25.0	31.0	21.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt WSW.
1319	1324	LT										
1324	1330	OL	PL01_011	030.0°	100	110	26.0	27.0	17.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt WSW.

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	10-Jul-2015 Fri Julian Day: 191		CLIENT:	AK LNG	
PROSPECT / SITE:			JOB DESCRIPTION:	Seafloor Mapping	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	Pipeline	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 1	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	484	610.60 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	606,000.00	2.7% Complete
		NAUTICAL MILE: 6080.0			4,600.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1330	1336	LT										
1336	1342	OL	PL01_015	210.0°	100	110	25.0	32.0	22.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt WSW.
1342	1348	LT										
1348	1353	OL	PL01_020	030.0°	100	111	26.0	30.0	20.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt WSW. 1350 MVP Taken.
1353	1358	LT										
1358	1404	OL	PL01_016	210.0°	100	109	25.0	30.0	20.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt WSW.
1404	1408	LT										
1408	1414	OL	PL01_021	030.0°	100	111	27.0	29.0	19.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 5kt WSW.
1414	1419	LT										
1419	1425	OL	PL01_017	210.0°	100	109	26.0	29.0	19.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 5kt WSW.
1425	1429	LT										
1429	1435	OL	PL01_022	030.0°	100	111	28.0	32.0	22.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt WSW.
1435	1440	LT										
1440	1446	OL	PL01_018	210.0°	100	110	26.0	26.0	16.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt WSW.
1446	1451	LT										
1451	1458	OL	PL01_023	030.0°	100	110	27.0	35.0	25.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt S/W.
1458	1502	LT										
1502	1507	OL	PL01_019	210.0°	100	110	27.0	29.0	19.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt S/W.
1507	1520	OW										Recovery survey gear.
1520	1700	IT										Transit to dock for fueling. 1550: Received call informing that fuel truck will arrive at 1830.
1700	1810	OS										Standby for fuel truck
1810	1850	OW										Fueling toolbox. Fuel Vessel.
1850												

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	10-Jul-2015 Fri Julian Day: 191		CLIENT:	AK LNG	
PROSPECT / SITE:			JOB DESCRIPTION:	Seafloor Mapping	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	Pipeline	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 1	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	484	610.60 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	606,000.00	2.7% Complete
		NAUTICAL MILE: 6080.0			4,600.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL01_001	210.0°	110	114						Added mileage for run in/out
		AM	PL01_007	030.0°	111	115						Added mileage for run in/out
		AM	PL01_002	210.0°	110	114						Added mileage for run in/out
		AM	PL01_005	030.0°	111	115						Added mileage for run in/out
		AM	PL01_003	210.0°	110	114						Added mileage for run in/out
		AM	PL01_006	030.0°	111	115						Added mileage for run in/out
		AM	PL01_004	210.0°	110	114						Added mileage for run in/out
		AM	PL01_008	030.0°	110	114						Added mileage for run in/out
		AM	PL01_012	210.0°	110	114						Added mileage for run in/out
		AM	PL01_009	030.0°	111	115						Added mileage for run in/out
		AM	PL01_013	210.0°	110	114						Added mileage for run in/out
		AM	PL01_010	030.0°	111	115						Added mileage for run in/out
		AM	PL01_014	210.0°	111	115						Added mileage for run in/out
		AM	PL01_011	030.0°	110	114						Added mileage for run in/out
		AM	PL01_015	210.0°	110	114						Added mileage for run in/out
		AM	PL01_020	030.0°	111	115						Added mileage for run in/out
		AM	PL01_016	210.0°	109	113						Added mileage for run in/out
		AM	PL01_021	030.0°	111	115						Added mileage for run in/out
		AM	PL01_017	210.0°	109	113						Added mileage for run in/out
		AM	PL01_022	030.0°	111	115						Added mileage for run in/out
		AM	PL01_018	210.0°	110	114						Added mileage for run in/out
		AM	PL01_023	030.0°	110	114						Added mileage for run in/out
		AM	PL01_019	210.0°	110	114						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	11-Jul-2015 Sat Julian Day: 192
PROSPECT / SITE:	TM05
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 47
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

596.85 Kilometers
100.6% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.5	5 kts	S
Wx - 1800:	n/a	n/a	n/a
Wx - 2400:	n/a	n/a	n/a

SE Reporting (Place an "x" in the box, with brief descriptio

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Reviewed MAR-TRA-012
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0545	0600	OW										Morning ops meeting. Dockside checks.
0600	0700	IT										Transit to TM05
0700	0720	OW										On site. Deploy multibeam and conduct AML SVP.
0720	0724	LT										
0724	0738	OW	TM05_INFILL_007	027.0°	100	116	19.0	N/A	N/A			MBES/SBES Only Infill. Seas; 0.5m Winds: 3 kt S. (MB Pwr indicator went Grey once during line)
0738	0749	LT										Disconnected multibeam wetmate cable connection (slight gap visible), wiped contacts, applied silicone spray then re-plugged connector.
0749	0759	OW	TM05_INFILL_002	212.0°	100	116	23.0	N/A	N/A			MBES/SBES Only Infill. Seas; 0.5m Winds: 3 kt S.
0759	0802	LT										
0802	0816	OW	TM05_INFILL_008	031.0°	100	127	27.0	N/A	N/A			MBES/SBES Only Infill. Seas; 0.5m Winds: 3 kt S.
0816	0822	LT										Rigged a line to the MB cable to take weight off of the cable connection.
0822	0829	OW	TM05_INFILL_003	032.0°	100	122	24.0	N/A	N/A			MBES/SBES Only Infill. Seas; 0.5m Winds: 4 kt SSW.
0829	0835	LT										
0835	0841	OW	TM05_INFILL_009	216.0°	100	119	14.0	N/A	N/A			MBES/SBES Only Infill. Seas; 0.5m Winds: 7 kt SW.
0841	0848	LT										
0848	0911	OW	TM05_INFILL_001	031.0°	100	154	13.0	N/A	N/A			MBES/SBES Only Infill. Seas; 0.5m Winds: 4 kt SW.
0911	0919	LT										
0919	0953	OW	TM05_35B	211.0°	100	172	20.0	N/A	N/A			MBES/SBES Only Re-run. Seas; 0.3m Winds: 2 kt S. 0922 MVP Taken.
0953	1010	OW										Deploy USBL, SSS and Magnetometer.
1010	1018	LT										
1018	1042	OW	TM05_18A	031.0°	100	180	17.0	18.0	8.0			MBES/SBES/SSS/MAG Re-run. Seas; 0.3m Winds: 4kt S.
1042	1055	OW										Retrieve gear.
1055												Begin transit to PL01. End of this DPR Log, switching to Pipeline DPR.

ver 7.22.2015-A (Alaska)

DATE:	11-Jul-2015 Sat Julian Day: 192
PROSPECT / SITE:	TM05
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 47
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	214

596.85 Kilometers
100.6% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

TIME		OP CODE	LINE INFORMATION								DNP	DETAILED SURVEY INFORMATION
FROM	TO		LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)			

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	11-Jul-2015 Sat Julian Day: 192
PROSPECT / SITE:	PL001
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 2
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

613.80 Kilometers
4.7% Complete
7,800.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lanve Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	N/A	N/A	N/A
Wx - 1800:	0.2	3 kts	NW
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief descriptio

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-012
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1055	1120	IT										(DPR Log Transistion) Transit to PL01 from TM05 area. (Start on PL01 midway through day)
1120	1125	OW										Arrive at work site. Begin deploying survey gear.
1125	1145	E101										Port engine fuel alarm. Deployment stopped to change port engine fuel filter.
1145	1200	OW										Finish deploying equipment. SSS Leakage warning at end of deployment
1200	1206	LT										
1206	1219	OL	PL01_024	210.0°	100	110	26.0	34.0	24.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt S/W. 1210 MVP Taken (Upcast only, sensor wrapped around SSS cable).
1219	1222	LT										
1222	1226	OL	PL01_028	030.0°	100	111	27.0	29.0	19.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt S/W.
1226	1232	LT										
1232	1244	OL	PL01_025	210.0°	100	110	27.0	39.0	29.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt S/W.
1244	1248	LT										
1248	1252	OL	PL01_029	030.0°	100	110	27.0	27.0	17.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 2kt W. (~30 degree crab angle, max flood current)
1252	1257	LT										
1257	1308	OL	PL01_026	210.0°	100	110	28.0	37.0	27.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 2kt W.
1308	1311	LT										
1311	1316	OL	PL01_030	030.0°	100	111	28.0	28.0	18.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 2kt W.
1316	1321	LT										
1321	1333	OL	PL01_027	210.0°	100	109	29.0	38.0	28.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 2kt W.
1333	1338	LT										
1338	1343	OL	PL01_035	030.0°	100	113	27.0	26.0	16.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 2kt W.
1343	1349	LT										
1349	1403	OL	PL01_032	210.0°	100	111	27.0	30.0	20.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 2kt W. 1350 MVP Taken.
1403	1407	LT										
1407	1413	OL	PL01_036	030.0°	100	114	27.0	26.0	16.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt W.
1413	1421	LT										
1421	1428	OL	PL01_030	262.0°	100	109	29.0	36.0	26.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt W.
1428	1431	LT										
1431	1438	OL	PL01_037	030.0°	100	115	27.0	27.0	17.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt N/W.
1438	1444	LT										
1444	1452	OL	PL01_033	210.0°	100	110	28.0	34.0	24.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt N/W.
1452	1456	LT										
1456	1504	OL	PL01_038	030.0°	100	116	27.0	27.0	17.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt N/W.
1504	1510	LT										

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	11-Jul-2015 Sat Julian Day: 192
PROSPECT / SITE:	PL001
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 2
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

613.80 Kilometers
4.7% Complete
7,800.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
1510	1516	OL	PL01_034	210.0°	100	111	26.0	36.0	26.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt NW.
1516	1521	LT										
1521	1528	OL	PL01_039	030.0°	100	117	27.0	39.0	29.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt NW.
1528	1545	OW										Retrieve survey gear.
1545	1725	IT										Transit back to dock.
1725	1745	OW										Secure vessel.
1745												

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	11-Jul-2015 Sat Julian Day: 192
PROSPECT / SITE:	PL001
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 2
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

613.80 Kilometers
4.7% Complete
7,800.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL01_024	210.0°	110	114						Added mileage for run in/out
		AM	PL01_028	030.0°	111	115						Added mileage for run in/out
		AM	PL01_025	210.0°	110	114						Added mileage for run in/out
		AM	PL01_029	030.0°	110	114						Added mileage for run in/out
		AM	PL01_026	210.0°	110	114						Added mileage for run in/out
		AM	PL01_030	030.0°	111	115						Added mileage for run in/out
		AM	PL01_027	210.0°	109	113						Added mileage for run in/out
		AM	PL01_035	030.0°	113	117						Added mileage for run in/out
		AM	PL01_032	210.0°	111	115						Added mileage for run in/out
		AM	PL01_036	030.0°	114	118						Added mileage for run in/out
		AM	PL01_030	262.0°	109	113						Added mileage for run in/out
		AM	PL01_037	030.0°	115	119						Added mileage for run in/out
		AM	PL01_033	210.0°	110	114						Added mileage for run in/out
		AM	PL01_038	030.0°	116	120						Added mileage for run in/out
		AM	PL01_034	210.0°	111	115						Added mileage for run in/out
		AM	PL01_039	030.0°	117	121						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	12-Jul-2015 Sun Julian Day: 193
PROSPECT / SITE:	PL001/ PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 3
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

615.20 Kilometers
8.4% Complete
9,200.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lanve Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.2	1 kts	S
Wx - 1800:	0.2	5 kts	NNW
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-013, MAR-TRA-014
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0615	0630	OW									
0630	0800	IT									
0800	0835	OW									
0835	0847	LT									
0847	0913	OL	PL01_041	210.0°	100	183	25.0	24.0	14.0		
0913	0918	LT									
0918	0940	OL	PL01_040	030.0°	100	123	23.0	28.0	18.0		
0940	0945	LT									
0945	1032	OL	PL01_045	030.0°	100	164	22.0	23.0	13.0		
1032	1037	LT									
1037	1121	OL	PL01_042	210.0°	100	179	24.0	14.0	24.0		
1121	1126	LT									
1126	1153	OL	PL01_044	030.0°	100	172	22.0	22.0	12.0		
1153	1157	LT									
1157	1342	OL	PL01_043	210.0°	100	176	25.0	33.0	23.0		
1342	1422	OW									
1422	1433	OL	PL02_215	039.0°	100	133	22.0	23.0	13.0		
1433	1450	OW									
1450	1645	IT									
1645	1730	OW									
1730	1815	OW									
1815											

DETAILED SURVEY INFORMATION

Dockside checks. Slightly early start due to river tide.
Transit to PL001 work area.
Review TRA. Deploy survey gear

MBES/SBES/SS/MAG Seas; 0.2m Winds: 1kt S

MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt SSW.

MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt SSW. 10:05 MVP Taken.

MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt SSW. 10:47 Wake from another vessel.

MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt WNW. 11:45 MVP Taken. (Vessel Sounder off)

MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt NW.
Transit to PL002. 13:50 MVP Taken (PL001 site)
MBES/SBES/SS/MAG Seas; 0.2m Winds: 6kt NW. 14:25 MVP Taken (PL002 site).
Retrieve survey equipment.
Transit to dock.
Fuel Vessel
Routine Vessel Maintenance

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	12-Jul-2015 Sun Julian Day: 193
PROSPECT / SITE:	PL001
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 3
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

615.20 Kilometers
8.4% Complete
9,200.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	PL01_041	210.0°	183	187						Added mileage for run in/out
		AM	PL01_040	030.0°	123	127						Added mileage for run in/out
		AM	PL01_045	030.0°	164	168						Added mileage for run in/out
		AM	PL01_042	210.0°	179	183						Added mileage for run in/out
		AM	PL01_44	030.0°	172	176						Added mileage for run in/out
		AM	PL01_043	210.0°	176	180						Added mileage for run in/out
		AM	PL02_215	039.0°	133	137						Added mileage for run in/out

ver 7.22.2015-A (Alaska)

DATE:	12-Jul-2015 Sun Julian Day: 193
PROSPECT / SITE:	PL001
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 3
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

615.20 Kilometers
8.4% Complete
9,200.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	13-Jul-2015 Mon Julian Day: 194
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 4
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

616.80 Kilometers
10.8% Complete
10,800.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	1	5-10 kts	N
Wx - 1800:	1 - 1.2	10-15 kts	W
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief descriptio

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-015, Loss of Power Drill, Abandon Ship Drill
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting. Dockside checks.
0700	0910	IT										Transit to PL02. Loss of Power drill (discussion). Morning toolbox talk.
0910	0940	OW										Review MAR-TRA-015. Take AML SVP. Deploy survey gear
0940	0943	LT										
0943	0954	OL	PL02_210	219.0°	100	133	19.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 1m Winds: 6kt NE. Noise in MB and Mag likely caused by current.
0954	1004	LT										
1004	1044	OL	PL02_214	039.0°	100	132	18.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 1m Winds: 7kt NE.
1044	1048	LT										
1048	1057	OL	PL02_211	219.0°	100	133	19.0	22.0	12.0			MBES/SBES/SS/MAG Seas; 1m Winds: 12kt NE.
1057	1103	LT										
1103	1156	OL	PL02_213	039.0°	100	133	18.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 0.8m Winds: 11kt NE. 11:20 MVP Taken.
1156	1203	LT										
1203	1218	OL	PL02_208	219.0°	100	133	17.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 0.5m Winds: 10kt NE.
1218	1223	LT										
1223	1240	OL	PL02_212	039.0°	100	131	18.0	17.0	7.0			MBES/SBES/SS/MAG Seas; 0.8m Winds: 11kt NE. MB data quality degraded.
1240	1247	LT										
1247	1331	OL	PL02_207	219.0°	100	132	19.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 0.8m Winds: 12kt NE. MB data quality degraded.
1331	1335	LT										
1335	1345	OL	PL02_209	039.0°	100	133	20.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 1m Winds: 12kt NE. MB and SSS data quality degraded. 13:40 MVP Taken
1345	1400	OW										Recover survey gear due to increasing weather.
1400	1600	IT										Transit back to dock.
1600	1830	WS										Secure vessel. Weather Standby.
1830												

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	13-Jul-2015 Mon Julian Day: 194
PROSPECT / SITE:	PL001/ PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 4
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

616.80 Kilometers
10.8% Complete
10,800.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL02_210	219.0°	133	137						Added mileage for run in/out
		AM	PL02_214	039.0°	132	136						Added mileage for run in/out
		AM	PL02_211	219.0°	133	137						Added mileage for run in/out
		AM	PL02_213	039.0°	133	137						Added mileage for run in/out
		AM	PL02_208	219.0°	133	137						Added mileage for run in/out
		AM	PL02_212	039.0°	131	135						Added mileage for run in/out
		AM	PL02_207	219.0°	132	136						Added mileage for run in/out
		AM	PL02_209	039.0°	133	137						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	14-Jul-2015 Tue Julian Day: 195
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 5
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

618.40 Kilometers
13.1% Complete
12,400.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.2	< 5kts	SW
Wx - 1800:	N/A	5kts	NW
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	Weekly Safety Meeting, JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-005, Weekly Safety Meeting
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0740	OW										Morning Ops Meeting. Weekly Safety Meeting. Dockside checks.
0740	0920	IT										Transit to PL002
0920	0945	OW										Review MAR-TRA-005. Take AML SVP. Deploy survey gear
0945	0955	LT										
0955	1028	OL	PL02_206	039.0°	100	132	19.0	23.0	13.0			MBES/SSS/MAG Seas; 0.2m Winds: 1kt SW. Single beam not recorded. MB noisy, likely due to high currents.
1028	1032	LT										
1032	1042	OL	PL02_203	219.0°	100	132	17.0	20.0	10.0			MBES/SSS/MAG Seas; 0.2m Winds: 3kt NW. Single beam not recorded. MB noisy.
1042	1050	LT										
1050	1121	OL	PL02_205	039.0°	100	133	18.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt NW. MB noisy.
1121	1126	LT										
1126	1136	OL	PL02_202	219.0°	100	133	17.0	18.0	8.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt W. MB noisy.
1136	1144	LT										
1144	1218	OL	PL02_204	039.0°	100	132	18.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 3kt WSW. MB still noisy with little current. 11:47 MVP Taken.
1218	1235	E00										Troubleshooting MBES noise. Problem appears to be in cable from sensor head to deck lead connection
1235	1240	LT										
1240	1254	OL	PL02_199	219.0°	100	133	16.0	17.0	7.0			MBES/SBES/SS/MAG Seas: 0.2m Winds: 2kt NW. MB noisy.
1254	1259	LT										
1259	1314	OL	PL02_201	039.0°	100	133	17.0	21.0	11.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 4kt NW. MB noisy. 13:07 MVP Taken
1314	1321	LT										
1321	1348	OL	PL02_197	219.0°	100	132	19.0	21.0	11.0			MBES/SBES/SS/MAG Seas; 0.2m Winds: 5kt NW. MB noisy.
1348	1400	OW										Recover survey gear.
1400	1535	IT										Transit back to dock.
1535	1700	SE										Vessel Maintenance (oil change).
1700	1740	OW										Fuel Vessel
1740	1830	SE										Continue vessel maintenance (oil change).
1830												

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	14-Jul-2015 Tue Julian Day: 195
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 5
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

618.40 Kilometers
13.1% Complete
12,400.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL02_206	039.0°	132	136						Added mileage for run in/out
		AM	PL02_203	219.0°	132	136						Added mileage for run in/out
		AM	PL02_205	039.0°	133	137						Added mileage for run in/out
		AM	PL02_202	219.0°	133	137						Added mileage for run in/out
		AM	PL02_204	039.0°	132	136						Added mileage for run in/out
		AM	PL02_199	219.0°	133	137						Added mileage for run in/out
		AM	PL02_201	039.0°	133	137						Added mileage for run in/out
		AM	PL02_197	219.0°	132	136						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	15-Jul-2015 Wed Julian Day: 196
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 6
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

620.00 Kilometers
15.4% Complete
14,000.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.5	10 - 15 kts	S
Wx - 1800:	0.3	4 kts	NW
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-006
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0710	OW									
0710	0735	E00									
0735	1020	IT									
1020	1055	OW									
1055	1100	LT									
1100	1146	OL	PL02_200	039.0°	100	132	18.0	20.0	10.0		
1146	1150	LT									
1150	1201	OL	PL02_196	219.0°	100	133	17.0	19.0	9.0		
1201	1209	LT									
1209	1252	OL	PL02_198	039.0°	100	132	17.0	18.0	8.0		
1252	1259	LT									
1259	1311	OL	PL02_193	219.0°	100	132	17.0	18.0	8.0		
1311	1319	LT									
1319	1342	OL	PL02_195	039.0°	100	133	19.0	18.0	8.0		
1342	1349	LT									
1349	1413	OL	PL02_192	219.0°	100	133	18.0	20.0	10.0		
1413	1422	LT									
1422	1434	OL	PL02_194	039.0°	100	132	20.0	20.0	10.0		
1434	1450	LT									
1450	1526	OL	PL02_189	219.0°	100	132	21.0	26.0	16.0		
1526	1540	OW									
1540	1730	IT									
1730	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Morning Ops Meeeting. Dockside Checks.
Test Multibeam at the Dock with new cabling. Full swath, roll data showing up in MB display. Data looks ok.
Transit to PL002. Slow transit due to high (6 to 7kt) ebb current. Max vessel speed 10 to 18 knots.
Deploy multibeam. Take AML SVP. Deploy towfish. (AML comms issues, had to restart nav computer)

MBES/SBES/SS/MAG Seas; 0.5m Winds: 5kt SSW. Vessel: 1kt, 870 rpm [Note: MBES head removed yesterday. New patch test required]

MBES/SBES/SS/MAG Seas; 0.5m Winds: 5kt SSW. Vessel: 5.9kt, 670 rpm (6.5kt @ 870 rpm)

MBES/SBES/SS/MAG Seas; 0.5m Winds: 4kt SW. Vessel: 1.2kt, 740 rpm. 12:27 MVP Taken.

MBES/SBES/SS/MAG Seas; 0.3m Winds: 3kt W. Vessel: 5.3 kt, 740 rpm.

MBES/SBES/SS/MAG Seas; 0.3m Winds: 4kt WNW. Vessel: 2.2 kt, 660 rpm.

MBES/SBES/SS/MAG Seas; 0.3m Winds: 4kt NW. Vessel: 3.1 kt, 740 rpm.

MBES/SBES/SS/MAG Seas; 0.3m Winds: 4kt NW. Vessel: 4.8 kt, 640 rpm. 14:27 MVP Taken.

MBES/SBES/SS/MAG Seas; 0.3m Winds: 4kt NW. Vessel: 1.6 kt, 880 rpm (beginning of line). 2.1kt, 1050 rpm (end of line)
Recover survey gear.
Transit back to dock. Transit faster than in the morning despite running against a max flood current (predicted 6.9kt).
Secure Vessel. Locate spare equipment in warehouse. Reviewed data with processors.

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	15-Jul-2015 Wed Julian Day: 196
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 6
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

620.00 Kilometers
15.4% Complete
14,000.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL02_200	039.0°	132	136						Added mileage for run in/out
		AM	PL02_196	219.0°	133	137						Added mileage for run in/out
		AM	PL02_198	039.0°	132	136						Added mileage for run in/out
		AM	PL02_193	219.0°	132	136						Added mileage for run in/out
		AM	PL02_195	039.0°	133	137						Added mileage for run in/out
		AM	PL02_192	219.0°	133	137						Added mileage for run in/out
		AM	PL02_194	039.0°	132	136						Added mileage for run in/out
		AM	PL02_189	219.0°	132	136						

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	16-Jul-2015 Thu Julian Day: 197
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 7
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

621.80 Kilometers
17.2% Complete
15,800.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	Richie Carmichael
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	1	7 kts	E
Wx - 1800:	N/A	N/A	N/A
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-009, MAR-TRA-013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0720	OW										Morning ops meeting. Dockside checks.
0720	0849	IT										Transit to Boulder Point patch test area.
0849	0910	OW										Deploy multibeam. Take AML SVP.
0910	0914	LT										
0914	0928	CAL	PT_JD197_001A	040.0°	100	123	18.0	N/A	N/A			MBES Seas; 1.2m Winds: 12kt E. Vessel: 3.5 kt, 1230 rpm.
0928	0929	LT										
0929	0935	CAL	PT_JD197_001B	220.0°	100	144	18.0	N/A	N/A			MBES Seas; 1.3m Winds: 12kt E. Vessel: 5.2 kt, 900 rpm.
0935	0937	LT										
0937	0948	CAL	PT_JD197_002A	040.0°	100	166	17.0	N/A	N/A			MBES Seas; 1.3m Winds: 12kt E. Vessel: 3.5 kt, 1320 rpm.
0948	1000	OW										Retrieve equipment due to weather conditions. Unable to keep line, multibeam whiting out.
1000	1031	IT										Transit to PL002 to check sea conditions
1031	1115	OW										Conditions at PL002 workable. Deploy gear. Gear deployment took longer than usual due to new crew training.
1115	1148	OL	PL02_191	039.0°	100	133	21.0	23.0	13.0			MBES/SBES/SS/MAG Seas; 0.5m Winds: 7kt E. Vessel: 2 kt, 1080 rpm. 11:20 MVP Taken.
1148	1156	LT										
1156	1205	OL	PL02_188	219.0°	100	133	19.0	20.0	10.0			MBES/SBES/SS/MAG Seas; 0.8m Winds: 9kt E. Vessel: 6.0 kt, 700 rpm
1205	1213	LT										
1213	1243	OL	PL02_190	039.0°	100	132	19.0	21.0	11.0			MBES/SBES/SS/MAG Seas; 1.0m Winds: 7kt E. Vessel: 2.4 kt, 1090 rpm
1243	1248	LT										
1248	1252	OL	PL02_185	219.0°	100	112	18.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 1.2m Winds: 8kt E. Vessel: 5.9 kt, 780 rpm
1252	1259	LT										
1259	1328	OL	PL02_187	039.0°	100	133	19.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 1.2m Winds: 8kt ENE. Vessel: 2.0 kt, 1090 rpm. Striping in SSS data. 15kt wind measured on back deck.
1328	1331	LT										
1331	1336	OL	PL02_186	219.0°	100	117	15.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 1.2m Winds: 7 kt NE. Vessel: 6.6 kt, 960 rpm
1336	1342	LT										
1342	1350	OL	PL02_184	052.0°	100	110	18.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 1.2m Winds: 7 kt NE. Vessel: 2.0 kt, 1020 rpm. New line direction (52 deg) has marginal SSS data quality.
1350	1352	LT										
1352	1357	OL	PL02_182	232.0°	100	111	18.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 1.5m Winds: 11 kt NE. Vessel: 4.8 kt, 820 rpm. Data quality better line heading (232 deg).
1357	1405	LT										Transit to top of line very rough.
1405	1409	OL	PL02_183	232.0°	100	111	18.0	19.0	9.0			MBES/SBES/SS/MAG Seas; 1.5m Winds: 11 kt NE. Vessel: 5 kt, 930 rpm
1409	1430	OW										Sea state becoming unfavorable for gear recovery. Recover gear.
1430	1610	IT										Transit back to dock.
1610	1650	OW										Vessel fueling toolbox. Fuel vessel.
1650	1830	WS										Weather Standby.

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	16-Jul-2015 Thu Julian Day: 197
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 7
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

621.80 Kilometers
17.2% Complete
15,800.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
1830		AM	PL02_191	039.0°	133	137						Added mileage for run in/out
		AM	PL02_188	219.0°	133	137						Added mileage for run in/out
		AM	PL02_190	039.0°	132	136						Added mileage for run in/out
		AM	PL02_185	219.0°	112	116						Added mileage for run in/out
		AM	PL02_187	039.0°	133	137						Added mileage for run in/out
		AM	PL02_186	219.0°	117	121						Added mileage for run in/out
		AM	PL02_184	052.0°	110	114						Added mileage for run in/out
		AM	PL02_182	232.0°	111	115						Added mileage for run in/out
		AM	PL02_183	232.0°	111	115						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	17-Jul-2015 Fri Julian Day: 198
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 8
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 — 621.80 Kilometers
	17.2% Complete
	15,800.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	1 to 2	28 kts	S
Wx - 1800:	N/A	N/A	N/A
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description)

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Weather Discussion
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0710	OW									
0710	0735	IT									
0735	0810	IT									
0810	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Morning ops meeting. Wx report from Westward Wind: winds >25kts, >3ft seas. Dockside checks
Transit to Cook Inlet to check weather. Forecast predicts unfavorable weather for small craft (small craft advisory in effect).
Conditions at mouth of inlet >3ft seas, numerous white caps with spray. Wind >25kts. Conditions not suitable for survey. Head for dock.
Arrive at dock. Secure vessel. Weather Standby.

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	18-Jul-2015 Sat Julian Day: 199
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 9
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 — 621.80 Kilometers
	17.2% Complete
	15,800.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	N/A	N/A	N/A
Wx - 1800:	N/A	N/A	N/A
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description)

HSE OFFICER:		Doug Bowlus
Toolbox:		
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	1830										
1830											

DETAILED SURVEY INFORMATION

Fatigue Day.

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	19-Jul-2015 Sun Julian Day: 200
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 10
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 — 621.80 Kilometers
	17.2% Complete
	15,800.00 Meters Added

GEOPHYSICAL EQUIPMENT EQUIP #

Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	N/A	N/A	N/A
Wx - 1800:	N/A	N/A	N/A
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description)

HSE OFFICER:		Doug Bowlus
Toolbox:		
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	1830										
1830											

DETAILED SURVEY INFORMATION

Fatigue day.

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	20-Jul-2015 Mon Julian Day: 201
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 11
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

627.80 Kilometers
22.3% Complete
21,800.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.5	6 kts	NW
Wx - 1800:	0.3	5 - 10 kts	W
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-005
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0705	OW										Morning ops meeting. Dockside checks.
0705	0830	IT										Transit to PL002.
0830	0855	OW										Review MAR-TRA-005. Take AML SVP. Deploy survey gear
0855	0902	LT										
0902	0907	OL	PL02_181	052.0°	100	113	25.0	24.0	14.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt N. Vessel: 4.5kt, 730 rpm. SBES not running until shot point 108.
0907	0911	LT										
0911	0919	OL	PL02_178	232.0°	100	116	23.0	26.0	16.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt N. Vessel: 4kt, 1050 rpm.
0919	0922	LT										
0922	0928	OL	PL02_180	052.0°	100	114	25.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt N. Vessel: 4.7kt, 850 rpm.
0928	0933	LT										
0933	0940	OL	PL02_177	232.0°	100	118	25.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt N.
0940	0944	LT										
0944	0950	OL	PL02_179	052.0°	100	115	25.0	29.0	19.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt N. Vessel: 4.3kt, 940 rpm.
0950	0954	LT										
0954	1000	OL	PL02_174	232.0°	100	118	23.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt N. Vessel: 5.2 kt, 940 rpm.
1000	1004	LT										
1004	1014	OL	PL02_176	052.0°	100	118	25.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt NNE. Vessel: 3.6 kt, 960 rpm.
1014	1017	LT										
1017	1022	OL	PL02_173	232.0°	100	119	23.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt NNE. Vessel: 6.3 kt, 940 rpm.
1022	1027	LT										
1027	1040	OL	PL02_175	052.0°	100	117	24.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt NNE. Vessel: 2.8 kt, 960 rpm. 10:36 MVP Taken.
1040	1043	LT										
1043	1049	OL	PL02_170	232.0°	100	118	23.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 7kt NW. Vessel: 5.7 kt, 670 rpm.
1049	1055	LT										
1055	1112	OL	PL02_172	052.0°	100	119	23.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 7kt NW. Vessel: 2.1 kt, 1010 rpm.
1112	1114	LT										
1114	1119	OL	PL02_169	232.0°	100	119	22.0	26.0	16.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 7kt NW. Vessel: 6.5 kt, 710 rpm.
1119	1126	LT										
1126	1142	OL	PL02_171	052.0°	100	118	22.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 7kt NW. Vessel: 2.2 kt, 1170 rpm.
1142	1145	LT										
1145	1150	OL	PL02_166	232.0°	100	117	20.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt NW. Vessel: 6.8 kt, 730 rpm.
1150	1157	LT										
1157	1216	OL	PL02_168	052.0°	100	119	21.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt NW. Vessel: 1.8 kt, 1220 rpm.

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	20-Jul-2015 Mon Julian Day: 201
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 11
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

627.80 Kilometers
22.3% Complete
21,800.00 Meters Added

TIME		OP	LINE INFORMATION								DNP	DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)			
1216	1218	LT										
1218	1224	OL	PL02_165	232.0°	100	118	17.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 2kt NW. Vessel: 6.3 kt, 600 rpm.
1224	1230	LT										
1230	1254	OL	PL02_167	052.0°	100	118	20.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 1kt NW. Vessel: 2 kt, 1060 rpm. 12:33 MVP Taken (down cast only).
1254	1257	LT										
1257	1303	OL	PL02_162	232.0°	100	118	18.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 1kt NW. Vessel: 6 kt, 600 rpm.
1303	1309	LT										
1309	1337	OL	PL02_164	052.0°	100	119	19.0	21.0	11.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 1kt W. Vessel: 1.4 kt, 670 rpm.
1337	1340	LT										
1340	1347	OL	PL02_161	232.0°	100	119	17.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 1kt W. Vessel: 5.7 kt, 600 rpm.
1347	1352	LT										
1352	1417	OL	PL02_163	052.0°	100	118	16.0	20.0	10.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 1kt W. Vessel: 1.8 kt, 860 rpm.
1417	1423	LT										
1423	1430	OL	PL02_158	232.0°	100	118	14.0	16.0	6.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 4kt NW. Vessel: 5.2 kt, 600 rpm.
1430	1435	LT										
1435	1448	OL	PL02_162	052.0°	100	119	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 3kt NW. Vessel: 2.6 kt, 940 rpm. 14:37 MVP Taken.
1448	1452	LT										
1452	1500	OL	PL02_157	232.0°	100	119	12.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt W. Vessel: 4.8 kt, 600 rpm. Getting too shallow for beacon.
1500	1504	LT										
1504	1516	OL	PL02_159	052.0°	100	118	14.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 10kt W. Vessel: 2.0 kt, 690 rpm.
1516	1521	LT										
1521	1528	OL	PL02_154	232.0°	100	118	10.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 9kt W. Vessel: 5 kt, 700 rpm.
1528	1532	LT										
1532	1541	OL	PL02_156	052.0°	100	119	13.0	16.0	6.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 7kt W. Vessel: 4 kt, 1050 rpm.
1541	1545	LT										
1545	1552	OL	PL02_153	232.0°	100	119	11.0	16.0	6.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 7kt W. Vessel: 5.3 kt,820 rpm.
1552	1603	LT										Longer line turn to avoid UTC rollover.
1603	1612	OL	PL02_155	052.0°	100	118	14.0	16.0	6.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 7kt W. Vessel: 4.2 kt, 900 rpm.
1612	1615	LT										
1615	1623	OL	PL02_150	232.0°	100	118	10.0	16.0	6.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 6kt W. Vessel: 4.8 kt, 880 rpm.
1623	1635	OW										Retrieve gear.
1635	1800	IT										*Transit to dock.*
1800	1830	OW										Secure vessel.
1830												

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	20-Jul-2015 Mon Julian Day: 201
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 11
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

627.80 Kilometers
22.3% Complete
21,800.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL02_181	052.0°	113	117						Added mileage for run in/out
		AM	PL02_178	232.0°	116	120						Added mileage for run in/out
		AM	PL02_180	052.0°	114	118						Added mileage for run in/out
		AM	PL02_177	232.0°	118	122						Added mileage for run in/out
		AM	PL02_179	052.0°	115	119						Added mileage for run in/out
		AM	PL02_174	232.0°	118	122						Added mileage for run in/out
		AM	PL02_176	052.0°	118	122						Added mileage for run in/out
		AM	PL02_173	232.0°	119	123						Added mileage for run in/out
		AM	PL02_175	052.0°	117	121						Added mileage for run in/out
		AM	PL02_170	232.0°	118	122						Added mileage for run in/out
		AM	PL02_172	052.0°	119	123						Added mileage for run in/out
		AM	PL02_169	232.0°	119	123						Added mileage for run in/out
		AM	PL02_171	052.0°	118	122						Added mileage for run in/out
		AM	PL02_166	232.0°	117	121						Added mileage for run in/out
		AM	PL02_168	052.0°	119	123						Added mileage for run in/out
		AM	PL02_165	232.0°	118	122						Added mileage for run in/out
		AM	PL02_167	052.0°	118	122						Added mileage for run in/out
		AM	PL02_162	232.0°	118	122						Added mileage for run in/out
		AM	PL02_164	052.0°	119	123						Added mileage for run in/out
		AM	PL02_161	232.0°	119	123						Added mileage for run in/out
		AM	PL02_163	052.0°	118	122						Added mileage for run in/out
		AM	PL02_158	232.0°	118	122						Added mileage for run in/out
		AM	PL02_162	052.0°	119	123						Added mileage for run in/out
		AM	PL02_157	232.0°	119	123						Added mileage for run in/out
		AM	PL02_159	052.0°	118	122						Added mileage for run in/out
		AM	PL02_154	232.0°	118	122						Added mileage for run in/out
		AM	PL02_156	052.0°	119	123						Added mileage for run in/out
		AM	PL02_153	232.0°	119	123						Added mileage for run in/out
		AM	PL02_155	052.0°	118	122						Added mileage for run in/out
		AM	PL02_150	232.0°	118	122						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	21-Jul-2015 Tue Julian Day: 202
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 12
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

630.20 Kilometers
24.3% Complete
24,200.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.5	4 kts	SW
Wx - 1800:	0.3	8 kts	SSW
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:		
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Medical Emergency Drill, MAR-TRA-007
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0750	OW										Morning ops meeting. Weekly safety meeting. FPI vessel audit. Dockside Checks.
0750	0905	IT										Morning toolbox. Conducted medical emergency vessel safety drill. Transit to patch test area.
0905	0925	OW										Review MAR-TRA-007. Take AML SVP. Deploy multibeam.
0925	0930	LT										
0930	0939	CAL	PT_JD202_001A	220.0°			20.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 3kt SW. Vessel: 3.4 kt, 790 rpm.
0939	0941	LT										
0941	0947	CAL	PT_JD202_002A	040.0°			20.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 3kt SW. Vessel: 6kt, 1000 rpm.
0947	0948	LT										
0948	0953	CAL	PT_JD202_002B	220.0°			20.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 3kt SW. Vessel: 6kt, 1190 rpm.
0953	0957	LT										
0957	1006	CAL	PT_JD202_001C	040.0°			20.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 4kt SW. Vessel: 3.8kt, 690 rpm.
1006	1009	LT										
1009	1018	CAL	PT_JD202_001D	220.0°			19.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 2kt SW. Vessel: 3.5 kt, 660 rpm.
1018	1020	LT										
1020	1029	CAL	PT_JD202_002C	040.0°			19.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 2kt SW. Vessel: 3 kt, 900 rpm.
1029	1031	LT										
1031	1038	CAL	PT_JD202_002D	220.0°			20.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 2kt S. Vessel: 4 kt, 600 rpm.
1038	1041	LT										
1041	1050	CAL	PT_JD202_001B	040.0°			19.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 2kt S. Vessel: 3.5 kt, 1100 rpm.
1050	1052	LT										
1052	1056	CAL	PT_JD202_003C	220.0°			20.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 4kt S. Vessel: 4 kt, 600 rpm.
1056	1100	LT										
1100	1107	CAL	PT_JD202_003D	040.0°			20.0	N/A	N/A			MBES/SBES (Patch Test Line) Seas; 0.3m Winds: 5kt SSW. Vessel: 3.3 kt, 1200 rpm. Yaw lines may need re-run at lower current.
1107	1115	OW										Recover Multibeam. Measured 10kt winds on back deck.
1115	1130	IT										Transit to PL002.
1130	1150	OW										Deploy survey gear. (Navigation computer had to be restarted)
1150	1206	LT										
1206	1229	OL	PL02_130	052.0°	100	119	21.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 4kt SW. Vessel: 1.5 kt, 1030 rpm. Noisy outer beams on Multibeam (NOB). 12:15 MVP Taken.
1229	1232	LT										
1232	1238	OL	PL02_127	232.0°	100	119	18.0	20.0	10.0			MBES/SBES/SSS/MAG Seas; 0.7m Winds: 3kt S. Vessel: 6.0 kt, 600 rpm. NOB
1238	1243	LT										
1243	1316	OL	PL02_129	052.0°	100	118	20.0	20.0	10.0			MBES/SBES/SSS/MAG Seas; 0.7m Winds: 4kt SW. Vessel: 1.5 kt, 950 rpm. NOB
1316	1318	LT										

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	21-Jul-2015 Tue Julian Day: 202
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 12
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

630.20 Kilometers
24.3% Complete
24,200.00 Meters Added

TIME		OP	LINE INFORMATION								DNP	DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)			
1318	1324	OL	PL02_126	232.0°	100	118	16.0	20.0	10.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 4kt SW. Vessel: 6 kt, 670 rpm. NOB
1324	1330	LT										
1330	1351	OL	PL02_128	052.0°	100	119	18.0	20.0	10.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 2kt S. Vessel: 2.2 kt, 930 rpm. NOB
1351	1353	LT										
1353	1359	OL	PL02_123	232.0°	100	118	15.0	20.0	10.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 2kt SW. Vessel: 6.3 kt, 800 rpm. NOB
1359	1404	LT										
1404	1420	OL	PL02_125	052.0°	100	118	16.0	20.0	10.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 3kt S. Vessel: 2.5 kt, 960 rpm. NOB 14:06 MVP Taken.
1420	1422	LT										
1422	1428	OL	PL02_122	232.0°	100	118	14.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 4kt SSW. Vessel: 6 kt, 750 rpm. NOB
1428	1433	LT										
1433	1445	OL	PL02_124	052.0°	100	119	14.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 4kt SSW. Vessel: 3 kt, 1040 rpm. NOB, Tide = ~1m.
1445	1448	LT										
1448	1455	OL	PL02_120	232.0°	100	118	13.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 8kt SSW. Vessel: 4.7 kt, 600 rpm. NOB, Tide = ~0.8m.
1455	1459	LT										
1459	1511	OL	PL02_121	052.0°	100	118	12.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 8kt SSW. Vessel: 3 kt, 1030 rpm. NOB
1511	1515	LT										
1515	1520	OL	PL02_119	232.0°	100	119	12.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 8kt SSW. Vessel: 5.5 kt, 680 rpm. NOB
1520	1533	OW										Retrieve gear.
1533	1650	IT										Transit back to dock.
1650	1745	OW										Fuel Vessel. Delays due to dock construction.
1745	1830	OW										Secure vessel.
1830												

Alaska LNG

ver 7.22.2015-A (Alaska)

DATE:	21-Jul-2015 Tue Julian Day: 202
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 12
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

630.20 Kilometers
24.3% Complete
24,200.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL02_130	052.0°	119	123						Added mileage for run in/out
		AM	PL02_127	232.0°	119	123						Added mileage for run in/out
		AM	PL02_129	052.0°	118	122						Added mileage for run in/out
		AM	PL02_126	232.0°	118	122						Added mileage for run in/out
		AM	PL02_128	052.0°	119	123						Added mileage for run in/out
		AM	PL02_123	232.0°	118	122						Added mileage for run in/out
		AM	PL02_125	052.0°	118	122						Added mileage for run in/out
		AM	PL02_122	232.0°	118	122						Added mileage for run in/out
		AM	PL02_124	052.0°	119	123						Added mileage for run in/out
		AM	PL02_120	232.0°	118	122						Added mileage for run in/out
		AM	PL02_121	052.0°	118	122						Added mileage for run in/out
		AM	PL02_119	232.0°	119	123						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	22-Jul-2015 Wed Julian Day: 203
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 13
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

636.60 Kilometers
29.6% Complete
30,600.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.5	2 kts	W
Wx - 1800:	0.5	8 kts	NE
Wx - 2400:	N/A	N/A	N/A

SE Reporting (Place an "x" in the box, with brief descriptio

HSE OFFICER:		
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-009
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0710	OW										Morning ops meeting. Installed line conditioner on SSS UPS. Dockside checks.
0710	0835	IT										Transit to PL002
0835	0900	OW										Review MAR-TRA-009. Take AML SVP. Deploy survey gear
0900	0902	LT										
0902	0913	OL	PL02_088	232.0°	100	118	14.0	16.0	6.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 8kt SW. Vessel: 3 kt, 860 rpm. Tide = 5.3m, 3.5kt flood. NOB
0913	0915	LT										
0915	0922	OL	PL02_090	052.0°	100	119	10.0	10.0	0.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 8kt SW. Vessel: 5.2 kt, 790 rpm. Tide = 5.3m, 3.2kt flood. SNOB
0922	0926	LT										
0926	0936	OL	PL02_087	232.0°	100	119	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 9kt SW. Tide = 5.4m, 3kt flood. SNOB
0936	0939	LT										
0939	0946	OL	PL02_089	052.0°	100	118	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 10kt SSW. Vessel: 4.7 kt, 840 rpm. Tide = 5.4m, 2.6kt flood SNOB
0946	0952	LT										
0952	1002	OL	PL02_082	232.0°	100	118	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 11kt SW. Vessel: 3.5 kt, 840 rpm. Tide = 5.4m, 2.4kt flood.
1002	1006	LT										
1006	1014	OL	PL02_086	052.0°	100	119	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 10kt S. Vessel: 4.5 kt, 830 rpm. Tide = 5.4m, 2.0kt flood.
1014	1018	LT										
1018	1027	OL	PL02_081	232.0°	100	119	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 7kt SSE. Vessel: 4 kt, 840 rpm. Tide = 5.3m, 1.6kt flood.
1027	1032	LT										
1032	1040	OL	PL02_085	052.0°	100	118	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 7kt SSE. Vessel: 4 kt, 840 rpm. Tide = 5.2m, 1.2kt flood.
1040	1044	LT										
1044	1052	OL	PL02_080	232.0°	123	141	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m swell. Winds: 6kt S. Tide = 5.1m, 0.8kt flood.
1052	1056	LT										
1056	1106	OL	PL02_084	052.0°	100	119	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m swell. Winds: 8kt S. Vessel: 3.8 kt, 840 rpm. Tide = 5.0m, Slack tide. 10:58 MVP Taken
1106	1109	LT										
1109	1117	OL	PL02_079	232.0°	100	118	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m swell. Winds: 8kt SW. Vessel: 4.6 kt, 800 rpm. Tide = 4.8m, Slack tide.
1117	1122	LT										
1122	1134	OL	PL02_083	052.0°	100	118	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m swell. Winds: 3kt WSW. Vessel: 2.6 kt, 800 rpm. Tide = 4.7m, 0.6kt ebb.
1134	1140	LT										
1140	1146	OL	PL02_074	232.0°	100	115	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m swell. Winds: 3kt WSW. Vessel: 4.8 kt, 800 rpm. Tide = 4.5m, 1.3kt ebb.
1146	1151	LT										
1151	1205	OL	PL02_078	052.0°	100	119	17.0	21.0	11.0			MBES/SBES/SSS/MAG Seas; 0.5m swell. Winds: 3kt WSW. Vessel: 2.6 kt, 930 rpm. Tide = 4.3m, 1.7kt ebb.
1205	1207	LT										
1207	1213	OL	PL02_073	232.0°	100	117	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m swell. Winds: 2kt W. Vessel: 5.6 kt, 750 rpm. Tide = 4m, 2.6kt ebb.

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	22-Jul-2015 Wed Julian Day: 203
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 13
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

636.60 Kilometers
29.6% Complete
30,600.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1213	1219	LT										
1219	1233	OL	PL02_077	052.0°	100	118	18.0	21.0	11.0			MBES/SBES/SSS/MAG Seas; 0.5m swell. Winds: 0kt S. Vessel: 2.8 kt, 1080 rpm. Tide = 3.9m, 2.9kt ebb.
1233	1235	LT										
1235	1240	OL	PL02_072	232.0°	100	117	17.0	21.0	11.0			MBES/SBES/SSS/MAG Seas; 0.5m swell. Winds: 1kt WSW. Vessel: 6.6 kt, 860 rpm. Tide = 3.5m, 3.8kt ebb.
1240	1247	LT										
1247	1305	OL	PL02_076	052.0°	100	119	17.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 1kt WSW. Vessel: 2.3 kt, 1030 rpm. Tide = 3.4m, 3.9kt ebb. 12:52 MVP Taken.
1305	1309	LT										
1309	1314	OL	PL02_071	232.0°	100	117	16.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 1kt W. Vessel: 5.9 kt, 750 rpm. Tide = 3.0m, 4.7kt ebb.
1314	1321	LT										
1321	1337	OL	PL02_075	052.0°	100	116	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 1kt W. Vessel: 2.4 kt, 980 rpm. Tide = 2.8m, 4.8kt ebb.
1337	1341	LT										
1341	1346	OL	PL02_066	232.0°	100	116	16.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 3kt NW. Vessel: 5.9 kt, 810 rpm. Tide = 2.4m, 5.0kt ebb.
1346	1351	LT										
1351	1405	OL	PL02_070	052.0°	100	117	16.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 2kt NW. Vessel: 2.5 kt, 940 rpm. Tide = 2.2m, 5.0kt ebb.
1405	1408	LT										
1408	1414	OL	PL02_065	232.0°	100	117	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 3kt N. Vessel: 5.8 kt, 810 rpm. Tide = 2m, 4.8kt ebb.
1414	1419	LT										
1419	1432	OL	PL02_069	052.0°	100	116	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 6kt NW. Vessel: 2.8 kt, 940 rpm. Tide = 1.8m, 4.7kt ebb.
1432	1434	LT										
1434	1440	OL	PL02_067	232.0°	100	117	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 8kt N. Vessel: 0.0 kt, 620 rpm. Tide = 1.0m, 4.4kt ebb.
1440	1442	LT										
1442	1454	OL	PL02_068	052.0°	100	116	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 8kt N. Vessel: 3.0 kt, 1050 rpm. Tide = 1.5m, 4.2kt ebb. 14:49 MVP Taken.
1454	1502	LT										
1502	1516	OL	PL02_095	052.0°	100	118	12.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 8kt N. Vessel: 2.4 kt, 940 rpm. Tide = 1.4m, 3.8kt ebb. POS M/V Drop Out @ SP 113
1516	1541	E00										Delay start of next line so POS Logging file can be ended after delayed heave allotted time. POS restart and init time.
1541	1545	LT										
1545	1551	OL	PL02_091	232.0°	100	119	12.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NE. Vessel: 5.1 kt, 800 rpm. Tide = 1.0m, 2.6kt ebb.
1551	1556	LT										
1556	1606	OL	PL02_096	052.0°	100	121	10.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 10kt NE. Vessel: 3.1 kt, 960 rpm. Tide = 1.0m, 2.3kt ebb.
1606	1608	LT										
1608	1615	OL	PL02_092	232.0°	100	118	11.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 10kt NE. Vessel: 5.4 kt, 800 rpm. Tide = 1.0m, 1.9kt ebb.
1615	1619	LT										
1619	1629	OL	PL02_097	052.0°	100	118	11.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 8kt NE. Vessel: 3.5 kt, 930 rpm. Tide = 1.0m, 1.7kt ebb.
1629	1631	LT										
1631	1638	OL	PL02_093	232.0°	100	119	10.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 8kt NE. Vessel: 5.2 kt, 870 rpm. Tide = 1.0m, 1.3kt ebb.
1638	1650	OW										Retrieve gear.
1650	1810	IT										Transit back to dock.
1810	1830	OW										Secure Vessel.
1830												

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	22-Jul-2015 Wed Julian Day: 203
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 13
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

636.60 Kilometers
29.6% Complete
30,600.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Path (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	PL02_088	232.0°	118	122						Added mileage for run in/out
		AM	PL02_090	052.0°	119	123						Added mileage for run in/out
		AM	PL02_087	232.0°	119	123						Added mileage for run in/out
		AM	PL02_089	052.0°	118	122						Added mileage for run in/out
		AM	PL02_082	232.0°	118	122						Added mileage for run in/out
		AM	PL02_086	052.0°	119	123						Added mileage for run in/out
		AM	PL02_081	232.0°	119	123						Added mileage for run in/out
		AM	PL02_085	052.0°	118	122						Added mileage for run in/out
		AM	PL02_080	232.0°	141	145						Added mileage for run in/out
		AM	PL02_084	052.0°	119	123						Added mileage for run in/out
		AM	PL02_079	232.0°	118	122						Added mileage for run in/out
		AM	PL02_083	052.0°	118	122						Added mileage for run in/out
		AM	PL02_074	232.0°	115	119						Added mileage for run in/out
		AM	PL02_078	052.0°	119	123						Added mileage for run in/out
		AM	PL02_073	052.0°	117	121						Added mileage for run in/out
		AM	PL02_077	052.0°	118	122						Added mileage for run in/out
		AM	PL02_072	232.0°	117	121						Added mileage for run in/out
		AM	PL02_076	052.0°	119	123						Added mileage for run in/out
		AM	PL02_071	232.0°	117	121						Added mileage for run in/out
		AM	PL02_075	052.0°	116	120						Added mileage for run in/out
		AM	PL02_066	232.0°	116	120						Added mileage for run in/out
		AM	PL02_070	052.0°	117	121						Added mileage for run in/out
		AM	PL02_065	232.0°	117	121						Added mileage for run in/out
		AM	PL02_069	052.0°	116	120						Added mileage for run in/out
		AM	PL02_067	232.0°	117	121						Added mileage for run in/out
		AM	PL02_068	052.0°	116	120						Added mileage for run in/out
		AM	PL02_095	052.0°	118	122						Added mileage for run in/out
		AM	PL02_091	232.0°	119	123						Added mileage for run in/out
		AM	PL02_096	052.0°	121	125						Added mileage for run in/out
		AM	PL02_092	232.0°	118	122						Added mileage for run in/out
		AM	PL02_097	052.0°	118	122						Added mileage for run in/out
		AM	PL02_093	232.0°	119	123						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	23-Jul-2015 Thu Julian Day: 204
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 14
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 — 640.30 Kilometers; 32.9% Complete; 34,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.3	2 kts	WNW
Wx - 1800:	1.0	10-15 kts	SW
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:		
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-010, MAR-TRA-013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0705	OW										Morning Ops Meeting. Dockside checks.
0705	0815	E101										Vessel issue discovered during dockside checks. Pick up required part at the store and fix the issue.
0815	0940	IT										Transit to PL002
0940	1005	OW										Review MAR-TRA-010. Take AML SVP (AML SVP not providing valid data - abort cast). Deploy survey gear.
1005	1020	OW										Navigation computer restart. Take MVP to make up for invalid AML SVP cast.
1020	1025	LT										
1025	1033	OL	PL02_060	232.0°	100	114	11.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt NW. Vessel: 4 kt, 060 rpm. Tide = 5.1m, 2.7kt flood.
1033	1036	LT										
1036	1042	OL	PL02_063	052.0°	100	115	9.0	16.0	6.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt NW. Vessel: 5.0 kt, 860 rpm. Tide = 5.1m, 2.5kt flood.
1042	1046	LT										
1046	1053	OL	PL02_061	232.0°	100	116	13.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt NW. Vessel: 4.2 kt, 980 rpm. Tide = 5.0m, 2.3kt flood.
1053	1058	LT										
1058	1105	OL	PL02_064	052.0°	100	117	10.0	16.0	6.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 4kt NW. Vessel: 4.4 kt, 850 rpm. Tide = 5.0m, 2.0kt flood.
1105	1112	LT										
1112	1119	OL	PL02_062	232.0°	100	115	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 3kt NW. Vessel: 4.3 kt, 930 rpm. Tide = 4.9m, 1.8kt flood.
1119	1125	LT										
1125	1129	OL	PL02_059	049.0°	100	110	9.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 3kt NW. Vessel: 4.4 kt, 870 rpm. Tide = 4.8m, 1.3kt flood.
1129	1133	LT										
1133	1138	OL	PL02_058	229.0°	100	115	11.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 3kt NW. Vessel: 4.6 kt, 920 rpm. Tide = 4.8m, 1.1kt flood.
1138	1149	LT										
1149	1150	OL	PL02_057	049.0°	100	115	9.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 2kt WNW. Vessel: 4.4 kt, 930 rpm. Tide = 4.7m, 0.8kt flood.
1150	1153	LT										
1153	1159	OL	PL02_056	229.0°	100	116	11.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 2kt WNW. Vessel: 4.4 kt, 920 rpm. Tide = 4.6m, 0.4kt flood.
1159	1205	LT										
1205	1213	OL	PL02_55	049.0°	100	116	10.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 2kt WNW. Vessel: 3.8 kt, 910 rpm. Tide = 4.5m,0.2 kt flood.
1213	1217	LT										
1217	1223	OL	PL02_54	229.0°	100	117	9.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 2kt WNW. Vessel: 5.2 kt, 760 rpm. Tide = 4.4m, slack tide.
1223	1226	LT										
1226	1236	OL	PL02_53	049.0°	100	116	10.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 3kt SW. Vessel: 3.2 kt, 920 rpm. Tide = 4.22m, 0.8kt ebb. 12:30 MVP Taken.
1236	1238	LT										
1238	1244	OL	PL02_52	229.0°	100	117	8.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 3kt SW. Vessel: 4.5 kt, 680 rpm. Tide = 4m, 1.2kt ebb.
1244	1247	LT										
1247	1258	OL	PL02_51	049.0°	100	116	8.0	15.0	5.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 6kt SW. Vessel: 2.7 kt, 900 rpm. Tide = 4m, 1.6kt ebb.

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	23-Jul-2015 Thu Julian Day: 204
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 14
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

640.30 Kilometers
32.9% Complete
34,300.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1258	1309	LT										
1309	1321	OL	PL02_098	052.0°	100	119	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt S/W. Vessel: 3 kt, 960 rpm. Tide = 3.6m, 2.6kt ebb. 13:16 MVP Taken (deeper water).
1321	1325	LT										
1325	1331	OL	PL02_094	232.0°	100	117	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 6kt S/W. Vessel: 5.3 kt, 730 rpm. Tide = 3.5m, 3.1kt ebb.
1331	1337	LT										
1337	1349	OL	PL02_099	052.0°	100	118	13.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 7kt S/W. Vessel: 2.9 kt, 1030 rpm. Tide = 3.4m, 3.3kt ebb.
1349	1352	LT										
1352	1358	OW	PL02_95A	232.0°	100	123	14.0	19.0	9.0			(Re-Run) MBES/SBES/SSS/MAG Seas; 0.3m Winds: 7kt SW. Vessel: 5.5 kt, 750 rpm. Tide = 3.1m, 3.9kt ebb.
1358	1408	LT										
1408	1420	OL	PL02_104	052.0°	100	119	12.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt S/W. Vessel: 2.8 kt, 1100 rpm. Tide = 2.9m, 4.2kt ebb.
1420	1424	LT										
1424	1431	OL	PL02_100	232.0°	100	117	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.7m Winds: 8kt S/W. Vessel: 5.1 kt, 700 rpm. Tide = 2.6m, 4.5kt ebb.
1431	1438	LT										
1438	1451	OL	PL02_105	052.0°	100	117	11.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.7m Winds: 8kt S/W. Vessel: 2.6 kt, 1050 rpm. Tide = 2.4m, 4.5kt ebb.
1451	1454	LT										
1454	1502	OL	PL02_101	232.0°	100	119	14.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.7m Winds: 8kt S/W. Vessel: 4.5 kt, 640 rpm. Tide = 2.3m, 4.4kt ebb.
1502	1508	LT										
1508	1520	OL	PL02_106	052.0°	100	118	12.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.7m Winds: 8kt S/W. Vessel: 2.8 kt, 1000 rpm. Tide = 2.1m, 4.3kt ebb.
1520	1523	LT										
1523	1531	OL	PL02_102	232.0°	100	117	13.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 1.0m Winds: 8kt S/W. Vessel: 5 kt, 910 rpm. Tide = 1.0m, 4.0kt ebb. Some stripping in SSS.
1531	1545	OW										Recover Survey gear.
1545	1705	IT										Transit back to dock.
1705	1800	OW										Vessel Fueling TRA. Fuel Vessel.
1800	1830	OW										Secure vessel.
1830												

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	23-Jul-2015 Thu Julian Day: 204
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 14
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

640.30 Kilometers
32.9% Complete
34,300.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	PL02_060	232.0°	114	118						Added mileage for run in/out
		AM	PL02_063	052.0°	115	119						Added mileage for run in/out
		AM	PL02_061	232.0°	116	120						Added mileage for run in/out
		AM	PL02_064	052.0°	117	121						Added mileage for run in/out
		AM	PL02_062	232.0°	115	119						Added mileage for run in/out
		AM	PL02_059	049.0°	110	112						Added mileage for run in/out
		AM	PL02_058	229.0°	115	117						Added mileage for run in/out
		AM	PL02_057	049.0°	115	117						Added mileage for run in/out
		AM	PL02_056	229.0°	116	118						Added mileage for run in/out
		AM	PL02_55	049.0°	116	118						Added mileage for run in/out
		AM	PL02_54	229.0°	117	119						Added mileage for run in/out
		AM	PL02_53	049.0°	116	118						Added mileage for run in/out
		AM	PL02_52	229.0°	117	119						Added mileage for run in/out
		AM	PL02_51	049.0°	116	118						Added mileage for run in/out
		AM	PL02_098	052.0°	119	123						Added mileage for run in/out
		AM	PL02_094	232.0°	117	121						Added mileage for run in/out
		AM	PL02_099	052.0°	118	122						Added mileage for run in/out
		AM	PL02_104	052.0°	119	123						Added mileage for run in/out
		AM	PL02_100	232.0°	117	121						Added mileage for run in/out
		AM	PL02_105	052.0°	117	121						Added mileage for run in/out
		AM	PL02_101	232.0°	119	123						Added mileage for run in/out
		AM	PL02_106	052.0°	118	122						Added mileage for run in/out
		AM	PL02_102	232.0°	117	121						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	24-Jul-2015 Fri Julian Day: 205		CLIENT:	AK LNG	
PROSPECT / SITE:	PL002		JOB DESCRIPTION:	Seafloor Mapping	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	Pipeline	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 15	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	484	645.50 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	606,000.00	38.0% Complete
		NAUTICAL MILE: 6080.0			39,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.2	5 kts	S
Wx - 1800:	0.5	4 kts	SSW
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-011
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0710	OW										Morning Ops Meeting. Dockside checks.
0710	0840	IT										Transit to Survey Site
0840	0940	OW										Review MAR-TRA-011. Take AML SVP. Deploy survey gear. Multiple issues during deployment. SSS troubleshooting. Nav restart.
0940	0944	LT										
0944	0953	OL	PL02_103	232.0°	100	119	13.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 7kt S Vessel: 3.6 kt, 1070 rpm. Tide = 3.9m, 3.5kt flood.
0953	0957	LT										
0957	1004	OL	PL02_111	052.0°	100	117	13.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 7kt S Vessel: 5.2 kt, 710 rpm. Tide = 3.9m, 3.5kt flood.
1004	1008	LT										
1008	1018	OL	PL02_107	232.0°	100	118	13.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt SW. Vessel: 3.8 kt, 1010 rpm. Tide = 4.2m, 3.5kt flood.
1018	1021	LT										
1021	1029	OL	PL02_112	052.0°	100	118	14.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 7kt S Tide = 4.3m, 3.4kt flood.
1029	1033	LT										
1033	1043	OL	PL02_108	232.0°	100	118	15.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 6kt S Vessel: 3.4 kt, 1000 rpm. Tide = 4.4m, 3.4kt flood.
1043	1046	LT										
1046	1053	OL	PL02_113	052.0°	100	118	13.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 6kt S Vessel: 5.2 kt, 780 rpm. Tide = 4.5m, 3.3kt flood. 10:48 MVP Taken.
1053	1058	LT										
1058	1109	OL	PL02_109	232.0°	100	119	15.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 6kt S Vessel: 3.1 kt, 900 rpm. Tide = 4.6m, 3.2kt flood.
1109	1112	LT										
1112	1121	OL	PL02_114	052.0°	100	119	15.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt S Vessel: 4 kt, 600 rpm. Tide = 4.6m, 3.0kt flood.
1121	1126	LT										
1126	1137	OL	PL02_110	232.0°	100	117	15.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt S Vessel: 3.1 kt, 890 rpm. Tide = 4.7m, 2.8kt flood.
1137	1141	LT										
1141	1148	OL	PL02_117	052.0°	100	118	15.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 4kt S Vessel: 5.2 kt, 760 rpm. Tide = 4.7m, 2.6kt flood.
1148	1152	LT										
1152	1201	OL	PL02_115	232.0°	100	119	16.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt S Vessel: 3.8 kt, 960 rpm. Tide = 4.7m, 2.4kt flood.
1201	1218	LT										
1218	1225	OL	PL02_050	229.0°	100	117	6.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 4 kt,850 rpm. Tide = 4.6m,1.7 kt flood.
1225	1229	LT										
1229	1235	OL	PL02_049	049.0°	100	115	9.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 4.2 kt, 870 rpm. Tide = 4.5m, 1.5kt flood.
1235	1239	LT										
1239	1245	OL	PL02_048	229.0°	100	117	7.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 4.7 kt, 990 rpm. Tide = 4.48m, 1.2kt flood.
1245	1249	LT										MVP delayed in order to keep watch while in shallow area.
1249	1256	OL	PL02_047	049.0°	100	117	9.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 4.5 kt, 970 rpm. Tide = 4.4m, 0.9kt flood.

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	24-Jul-2015 Fri Julian Day: 205		CLIENT:	AK LNG	
PROSPECT / SITE:	PL002		JOB DESCRIPTION:	Seafloor Mapping	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	Pipeline	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 15	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	484	645.50 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	606,000.00	38.0% Complete
		NAUTICAL MILE: 6080.0			39,500.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1256	1259	LT										
1259	1304	OL	PL02_046	229.0°	100	117	9.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 5 kt, 880 rpm. Tide = 4.3m, 0.6kt flood.
1304	1309	LT										
1309	1316	OL	PL02_045	049.0°	100	117	8.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 3.8 kt, 950 rpm. Tide = 4.3m, Slack Tide.
1316	1319	LT										
1319	1324	OL	PL02_044	229.0°	100	117	9.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 6.2 kt, 1100 rpm. Tide = 4.2m, Slack Tide.
1324	1328	LT										
1328	1335	OL	PL02_043	049.0°	100	117	8.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 4.0 kt, 1090 rpm. Tide = 4.1m, Slack Tide.
1335	1338	LT										
1338	1343	OL	PL02_042	229.0°	100	117	9.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 5.6 kt, 900 rpm. Tide = 4.0m, 0.8 kt ebb.
1343	1346	LT										Skip line 041, to see if we can still maintain coverage
1346	1354	OL	PL02_040	049.0°	100	117	8.0	15.0	5.0			MBES/SBES/SSS/MAG Vessel: 3.9 kt, 1060 rpm. Tide = 3.9m, 1.2kt ebb.
1354	1413	LT										
1413	1422	OL	PL02_116	052.0°	100	119	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 3.8 kt, 1080 rpm. Tide = 3.6m, 2.3kt ebb. 14:15 MVP Taken.
1422	1424	LT										
1424	1431	OL	PL02_118	232.0°	100	118	16.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 4.8 kt, 690 rpm. Tide = 3.4m, 2.8kt ebb.
1431	1441	LT										
1441	1453	OL	PL02_135	052.0°	100	118	19.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 6kt SSW. Vessel: 2.9 kt, 1080 rpm. Tide = 3.3m, 3.1kt ebb.
1453	1455	LT										
1455	1501	OL	PL02_131	232.0°	100	119	19.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 9kt SW. Vessel: 5.9 kt, 800 rpm. Tide = 3.0m, 3.7kt ebb.
1501	1507	LT										
1507	1519	OL	PL02_136	052.0°	100	119	19.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 9kt SW. Vessel: 2.6 kt, 1100 rpm. Tide = 2.9m, 2.9kt ebb.
1519	1521	LT										
1521	1527	OL	PL02_132	232.0°	100	118	17.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt SW. Vessel: 6 kt, 780 rpm. Tide = 2.8m, 4.0kt ebb.
1527	1533	LT										
1533	1545	OL	PL02_137	052.0°	100	118	19.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 3kt S. Vessel: 2.7 kt, 1130 rpm. Tide = 2.7m, 4.0kt ebb.
1545	1549	LT										
1549	1555	OL	PL02_133	232.0°	100	119	17.0	21.0	11.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 3kt S. Vessel: 5.6 kt, 680 rpm. Tide = 2.5m, 4.0kt ebb.
1555	1604	LT										Longer line turn to avoid UTC rollover.
1604	1615	OL	PL02_138	052.0°	100	119	18.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 4kt SSW. Vessel: 2.7 kt, 1100 rpm. Tide = 2.4m, 3.8kt ebb. 16:05 MVP Taken.
1615	1618	LT										
1618	1624	OL	PL02_134	232.0°	100	118	17.0	21.0	11.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 4kt S. Vessel: 5.5 kt, 720 rpm. Tide = 2.2m, 3.6kt ebb.
1624	1632	LT										
1632	1641	OL	PL02_143	052.0°	100	118	18.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 4kt S. Vessel: 3.8 kt, 1280 rpm. Tide = 2.2m, 3.3kt ebb.
1641	1643	LT										
1643	1648	OL	PL02_139	232.0°	100	119	16.0	21.0	11.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 4kt SSW. Vessel: 6.2 kt, 920 rpm. Tide = 2.0m, 3.2kt ebb.
1648	1700	OW										Recover gear.
1700	1820	IT										Transit to dock.
1820	1830	OW										Secure vessel.
1830												

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	24-Jul-2015 Fri Julian Day: 205		CLIENT:	AK LNG	
PROSPECT / SITE:	PL002		JOB DESCRIPTION:	Seafloor Mapping	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	Pipeline	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 15	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	484	645.50 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	606,000.00	38.0% Complete
		NAUTCAL MILE: 6080.0			39,500.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	PL02_103	232.0°	119	123						Added mileage for run in/out
		AM	PL02_111	052.0°	117	121						Added mileage for run in/out
		AM	PL02_107	232.0°	118	122						Added mileage for run in/out
		AM	PL02_112	052.0°	118	122						Added mileage for run in/out
		AM	PL02_108	232.0°	118	122						Added mileage for run in/out
		AM	PL02_113	052.0°	118	122						Added mileage for run in/out
		AM	PL02_109	232.0°	119	123						Added mileage for run in/out
		AM	PL02_114	052.0°	119	123						Added mileage for run in/out
		AM	PL02_110	232.0°	117	121						Added mileage for run in/out
		AM	PL02_117	052.0°	118	122						Added mileage for run in/out
		AM	PL02_115	232.0°	119	123						Added mileage for run in/out
		AM	PL02_050	229.0°	117	119						Added mileage for run in/out
		AM	PL02_049	049.0°	115	117						Added mileage for run in/out
		AM	PL02_048	229.0°	117	118						Added mileage for run in/out
		AM	PL02_047	049.0°	117	118						Added mileage for run in/out
		AM	PL02_046	229.0°	117	118						Added mileage for run in/out
		AM	PL02_045	049.0°	117	118						Added mileage for run in/out
		AM	PL02_044	229.0°	117	118						Added mileage for run in/out
		AM	PL02_043	049.0°	117	118						Added mileage for run in/out
		AM	PL02_042	229.0°	117	118						Added mileage for run in/out
		AM	PL02_040	049.0°	117	118						Added mileage for run in/out
		AM	PL02_116	052.0°	119	123						Added mileage for run in/out
		AM	PL02_118	232.0°	118	122						Added mileage for run in/out
		AM	PL02_135	052.0°	118	122						Added mileage for run in/out
		AM	PL02_131	232.0°	119	123						Added mileage for run in/out
		AM	PL02_136	052.0°	119	123						Added mileage for run in/out
		AM	PL02_132	232.0°	118	122						Added mileage for run in/out
		AM	PL02_137	052.0°	118	122						Added mileage for run in/out
		AM	PL02_133	232.0°	119	123						Added mileage for run in/out
		AM	PL02_138	052.0°	119	123						Added mileage for run in/out
		AM	PL02_134	232.0°	118	122						Added mileage for run in/out
		AM	PL02_143	052.0°	118	122						Added mileage for run in/out
		AM	PL02_139	232.0°	119	123						Added mileage for run in/out

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	25-Jul-2015 Sat Julian Day: 206
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 16
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG	
JOB DESCRIPTION:	Seafloor Mapping	
AREA & BLOCK:	Pipeline	
R/V:	Westerly	
No. of SURVEY LINES:	484	645.50 Kilometers
		38.0% Complete
		39,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - RZSonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.6 to 1.3 (forecast)	10 kts	WSW
Wx - 1800:	0.6 to 1.3 (forecast)	17 kts	SW
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Morning Meeting
Shift Change:		
Safety:	X	MAR-TRA-013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0700	OW									
0700	1630	E101									
1630	1715	OW									
1715	1830	E101									
1830											

DETAILED SURVEY INFORMATION

Morning ops meeting.
Vessel repair.
Review MAR-TRA-013. Fuel Vessel.
Vessel repair.

Alaska LNG

FUGRO

ver 7.22.2015-A (Alaska)

DATE:	26-Jul-2015 Sun Julian Day: 207
PROSPECT / SITE:	PL002
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 17
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 — 648.65 Kilometers; 42.1% Complete; 42,650.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Charlie Hall
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.5	16 kts	SSW
Wx - 1800:	1.0	17 kts	SW
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-012
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0720	OW										Morning ops meeting. Dockside checks.
0720	0910	IT										Transit to PL002
0910	0950	OW										Review MAR-TRA-012. Take AML SVP. Deploy survey gear. Nav restart. Wait for POS to log 10min of data.
0950	0954	LT										
0954	1001	OL	PL02_144	052.0°	100	119	17.0	17.0	7.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 15kt SSW. Vessel: 5.5 kt, 780 rpm. Tide = 2.1m, 1.7kt flood.
1001	1006	LT										
1006	1020	OL	PL02_140	232.0°	100	118	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 15kt SSW. Vessel: 2.7 kt, 900 rpm. Tide = 2.1m, 2.0kt flood.
1020	1023	LT										
1023	1029	OL	PL02_145	052.0°	100	118	17.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.6m. Vessel: 5.8 kt, 760 rpm. Tide = 2.4m, 2.5kt flood. (No updates from Nikiski Wind Station)
1029	1034	LT										
1034	1051	OL	PL02_141	232.0°	100	119	15.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.6m. Vessel: 2.2 kt, 930 rpm. Tide = 2.5m, 2.8kt flood.
1051	1053	LT										
1053	1059	OL	PL02_146	052.0°	100	119	18.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.6m. Vessel: 6.0 kt, 770 rpm. Tide = 2.7m, 3.1kt flood.
1059	1105	LT										
1105	1119	OL	PL02_142	232.0°	100	118	16.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.6m. Vessel: 2.5 kt, 990 rpm. Tide = 2.9m, 3.3kt flood.
1119	1122	LT										
1122	1128	OL	PL02_149	052.0°	100	118	17.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m. Vessel: 6.0 kt, 740 rpm. Tide = 3.1m, 3.6kt flood. 11:25 MVP Taken.
1128	1135	LT										
1135	1147	OL	PL02_147	232.0°	100	119	16.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m. Vessel: 3 kt, 1050 rpm. Tide = 3.3m, 3.8kt flood.
1147	1149	LT										
1149	1156	OL	PL02_151	052.0°	100	118	17.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m. Vessel: 5.5 kt, 680 rpm. Tide = 3.5m, 3.9kt flood.
1156	1201	LT										
1201	1214	OL	PL02_148	232.0°	100	118	17.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 16kt SSW. Vessel: 2.7 kt, 1010 rpm. Tide = 3.6m, 4.0kt flood.
1214	1216	LT										
1216	1223	OL	PL02_152	052.0°	100	118	18.0	19.0	9.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 15kt SSW. Vessel: 5.5 kt, 740 rpm. Tide = 3.9m, 4.2kt flood.
1223	1235	OW										Retrieve SSS and MAG in preparation for inshore work during high current conditions.
1235	1312	IT										Transit to inshore lines of PL02
1312	1320	OL	PL02_038	229.0°	100	118	9.0	N/A	N/A			MBES/SBES Seas; 0.3m Winds: 17kt SW. Vessel: 4.0 kt, 880 rpm. Tide = 4.5 m, 4.0kt flood.
1320	1321	LT										
1321	1326	OL	PL02_036	049.0°	100	117	7.0	N/A	N/A			MBES/SBES Seas; 0.3m Winds: 17kt SW. Vessel: 5.1 kt, 790 rpm. Tide = 4.5 m, 3.9kt flood.
1326	1328	LT										
1328	1335	OL	PL02_034	229.0°	100	117	9.0	N/A	N/A			MBES/SBES Seas; 0.3m Winds: 17kt SW. Vessel: 4.2 kt, 910 rpm. Tide = 4.6 m, 3.8kt flood.
1335	1336	LT										

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	26-Jul-2015 Sun Julian Day: 207
PROSPECT / SITE:	PL02
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 17
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

648.65 Kilometers
42.1% Complete
42,650.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1336	1341	OL	PL02_032	049.0°	100	117	6.0	N/A	N/A			MBES/SBES Seas; 0.3m Tide = 4.6 m, 3.7kt flood.
1341	1344	LT										
1344	1351	OL	PL02_031	229.0°	100	117	9.0	N/A	N/A			MBES/SBES Seas; 0.3m Tide = 4.6 m, 3.6kt flood.
1351	1352	LT										
1352	1358	OL	PL02_030	049.0°	100	117	6.0	N/A	N/A			MBES/SBES Seas; 0.3m Tide = 4.7 m, 3.4kt flood.
1358	1359	LT										
1359	1407	OL	PL02_029	229.0°	100	117	9.0	N/A	N/A			MBES/SBES Seas; 0.3m Tide = 4.7 m, 3.2kt flood.
1407	1408	LT										
1408	1413	OL	PL02_028	049.0°	100	117	6.0	N/A	N/A			MBES/SBES Seas; 0.3m Tide = 4.7 m, 3.0kt flood.
1413	1414	LT										
1414	1422	OL	PL02_027	229.0°	100	117	9.0	N/A	N/A			MBES/SBES Seas; 0.3m Tide = 4.7 m, 2.8kt flood. No run-out due to foul area on nautical chart.
1422	1423	LT										
1423	1428	OL	PL02_026	049.0°	119	135	6.0	N/A	N/A			MBES/SBES Seas; 0.3m Tide = 4.7 m, 2.5kt flood. No run-in due to foul area on nautical chart.
1428	1430	LT										
1430	1436	OL	PL02_025	229.0°	100	117	8.0	N/A	N/A			MBES/SBES Seas; 0.3m Tide = 4.7 m, 2.3kt flood. No run-out due to foul area on nautical chart.
1436	1441	LT										Performed a preliminary sweep of foul area in South West corner of work area. Depths < 3.0m observed in 30m swath.
1441	1447	OL	PL02_024	049.0°	119	135	5.0	N/A	N/A			MBES/SBES Seas: 0.3m Tide = 4.7 m. 1.9kt flood. No run-in due to foul area on nautical chart.
1447	1458	OW										14:50 SVP Taken with AML.
1458	1504	OL	PL02_023	229.0°	100	116	7.0	N/A	N/A			MBES Seas; 0.3m Tide = 4.6 m, 1.3kt flood. Line ended early due to foul area on nautical chart.
1504	1505	LT										
1505	1512	OL	PL02_022	049.0°	100	115	5.0	N/A	N/A			MBES Seas; 0.3m Tide = 4.6 m, 1.0kt flood. Started part way up line due to foul area on nautical chart.
1512	1514	LT										
1514	1519	OL	PL02_021	229.0°	100	114	7.0	N/A	N/A			MBES Seas; 0.3m Tide = 4.5 m, 0.7kt flood. Line ended early due to foul area on nautical chart.
1519	1520	LT										
1520	1527	OL	PL02_020	049.0°	100	114	4.5	N/A	N/A			MBES Seas; 0.3m Tide = 4.5 m, Slack Tide. Started part way up the line due to shallow water.
1527	1528	LT										
1528	1532	OL	PL02_019	229.0°	100	110	6.0	N/A	N/A			MBES Seas; 0.5m Tide = 4.4 m, Slack Tide. Line ended early due to shallow water.
1532	1538	LT										Water too shallow to continue surveying inshore.
1538	1545	OL	PL02_033	115.0°	100	113	9.0	N/A	N/A			MBES Seas; 0.5m Tide = 4.4 m, Slack Tide.
1545	1555	OW										Retrieve gear.
1555	1750	IT										Transit back to dock.
1750	1830	OW										Secure vessel.
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	26-Jul-2015 Sun Julian Day: 207
PROSPECT / SITE:	PL02
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 17
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

648.65 Kilometers
42.1% Complete
42,650.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	PL02_144	052.0°	119	123						Added mileage for run in/out
		AM	PL02_140	232.0°	118	122						Added mileage for run in/out
		AM	PL02_145	052.0°	118	122						Added mileage for run in/out
		AM	PL02_141	232.0°	119	123						Added mileage for run in/out
		AM	PL02_146	052.0°	119	123						Added mileage for run in/out
		AM	PL02_142	232.0°	118	122						Added mileage for run in/out
		AM	PL02_149	052.0°	118	122						Added mileage for run in/out
		AM	PL02_147	232.0°	119	123						Added mileage for run in/out
		AM	PL02_151	052.0°	118	122						Added mileage for run in/out
		AM	PL02_148	232.0°	118	122						Added mileage for run in/out
		AM	PL02_152	052.0°	118	122						Added mileage for run in/out
		AM	PL02_038	229.0°	118	119						Added mileage for run in/out
		AM	PL02_036	049.0°	117	118						Added mileage for run in/out
		AM	PL02_034	229.0°	117	118						Added mileage for run in/out
		AM	PL02_032	049.0°	117	118						Added mileage for run in/out
		AM	PL02_031	229.0°	117	118						Added mileage for run in/out
		AM	PL02_030	049.0°	117	118						Added mileage for run in/out
		AM	PL02_029	229.0°	117	118						Added mileage for run in/out
		AM	PL02_028	049.0°	117	118						Added mileage for run in/out
		AM	PL02_027	229.0°	117	118						Added mileage for run in/out
		AM	PL02_026	049.0°	135	136						Added mileage for run in/out
		AM	PL02_025	229.0°	117	118						Added mileage for run in/out
		AM	PL02_024	049.0°	135	136						Added mileage for run in/out
		AM	PL02_023	229.0°	116	117						Added mileage for run in/out
		AM	PL02_022	049.0°	115	116						Added mileage for run in/out
		AM	PL02_021	229.0°	114	115						Added mileage for run in/out
		AM	PL02_020	049.0°	114	115						Added mileage for run in/out
		AM	PL02_019	229.0°	110	111						Added mileage for run in/out
		AM	PL02_033	115.0°	113	115						Added mileage for run in/out

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	27-Jul-2015 Mon Julian Day: 208	CLIENT:	AK LNG
PROSPECT / SITE:	PL001 / PL003	JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	Pipeline
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 18	No. of SURVEY LINES:	484 649.65 Kilometers
CRP TO STERN:	0.00 N/A		47.3% Complete
			43,650.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.3	5 kts	W
Wx - 1800:	0.3	4 kts	W
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-014
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0705	OW										Morning ops meeting. Dockside checks.
0705	0825	IT										Transit to PL001
0825	0900	OW										Review MAR-TRA-014. Take AML SVP. Deploy survey gear. One SSS channel not coming into discover SSS computer full restart.
0900	0925	E00										Troubleshoot SSS. Starboard LF channel of SSS appears to not be transmitting. Rub test ok. no pulse visible on starboard when in water.
0925	0930	LT										
0930	0958	OW	PL01_INFILL_01	030.0°	100	167	23.0	29.0	19.0			(INFILL) MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 3.6 kt, 1040 rpm. Tide = 1.1m, 1.2ktebb.
0959	1008	LT										Waiting for tug to pass.
1008	1057	OL	PL03_004	030.0°	100	234	23.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 3kt SW. Vessel: 4 kt, 980 rpm. Tide = 1.2m, Slack tide. 10:23 MVP Taken.
1057	1103	LT										
1103	1228	OL	PL03_002	210.0°	100	233	35.0	52.0	42.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 3kt SW. Vessel: 4 kt, 910 rpm. Tide = 1.8m, 2.2kt flood. 12:21 MVP Taken.
1228	1232	LT										
1232	1309	OL	PL03_005	030.0°	100	234	25.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt W. Vessel: 5.4 kt, 670 rpm. Tide = 3.2m, 4.4kt flood.
1309	1316	LT										
1316	1428	OL	PL03_001	210.0°	100	233	37.0	70.0	60.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt W. Vessel: 2 kt, 1270 rpm. Tide = 3.9m, 4.8kt flood. 14:23 MVP Taken.
1428	1431	LT										
1431	1506	OL	PL03_003	030.0°	100	233	28.0	44.0	34.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 4kt W. Vessel: 6.2 kt, 870 rpm. Tide = 4.9m, 4.3kt flood. POS dropout.
1506	1507	OW										SSS dropped out at end of line.
1507	1520	OW										Retrieve gear.
1520	1650	IT										Transit back to dock. Call received that fuel truck is unable to make it until 18:30. Vessel safety drill (spill response) on transit in.
1650	1705	OW										Take on fresh water and rinse vessel.
1705	1830	OW										Secure vessel. Troubleshoot SSS, change out cable sheave. Survey crew stayed to re-terminate SSS wet-end and slip ring.
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	27-Jul-2015 Mon Julian Day: 208
PROSPECT / SITE:	PL001 / PL003
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 18
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

649.65 Kilometers
47.3% Complete
43,650.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL03_004	030.0°	234	238						Added mileage for run in/out
		AM	PL03_002	210.0°	233	237						Added mileage for run in/out
		AM	PL03_005	030.0°	234	238						Added mileage for run in/out
		AM	PL03_001	210.0°	233	237						Added mileage for run in/out
		AM	PL03_003	030.0°	233	237						Added mileage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	28-Jul-2015 Tue Julian Day: 209
PROSPECT / SITE:	PL001 / PL003
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 19
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

651.25 Kilometers
50.7% Complete
45,250.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.2	3 kts	NW
Wx - 1800:	0.2	2 kts	WNW
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	Toolbox
Shift Change:		
Safety:	X	Weekly Safty Meeting, Collecting Water in a bucket TRA, MAR-TRA-013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0645	0800	OW									
0800	0845	OW									
0845	1045	WS									
1045	1230	IT									
1230	1310	OW									
1310	1325	LT									
1325	1353	OL	PL04_004	024.0°	100	217	22.0	30.0	20.0		
1353	1407	LT									
1407	1415	OL	PL04_011	024.0°	100	134	25.0	37.0	27.0		
1415	1424	LT									
1424	1445	OL	PL04_009	204.0°	100	135	29.0	55.0	45.0		
1445	1449	LT									
1449	1458	OL	PL04_010	024.0°	100	133	28.0	37.0	27.0		
1458	1505	LT									
1505	1528	OL	PL04_008	204.0°	100	141	28.0	55.0	45.0		
1528	1534	LT									
1534	1543	OL	PL04_012	024.0°	100	133	29.0	41.0	31.0		
1543	1548	LT									
1548	1607	OL	PL04_013	204.0°	100	135	30.0	60.0	50.0		
1607	1611	LT									
1611	1650	OL	PL04_003	204.0°	100	206	28.0	55.0	45.0		
1650	1700	OW									
1700	1845	IT									
1845											

DETAILED SURVEY INFORMATION

Morning ops meeting. Safety meeting. Dockside checks.
Vessel fueling TRA. No JHA forms available to sign. Fuel vessel.
Waiting on tide. In the mean time, performed in water at dock testing of SSS with new termination.
Transit to PL004
Review Collecting Water in a Bucket TRA. Take AML SVP. Deploy survey gear.

MBES/SBES/SSS/MAG Seas; 0.2m Winds: 3kt NW. Vessel: 6 kt, 900 rpm. Tide = 3.4m, 5.2kt flood.

MBES/SBES/SSS/MAG Seas; 0.2m Winds: 3kt NW.

MBES/SBES/SSS/MAG Seas; 0.2m Winds: 4kt NW. Vessel: 3.2 kt,1200 rpm. Tide = 4.4m, 5.5kt flood.

MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt NW. Vessel: 6 kt, 840rpm. Tide = 4.9m, 5.3kt flood.

MBES/SBES/SSS/MAG Seas; 0.2m Winds: 3kt NW. Vessel: 3.5 kt, 1240 rpm. Tide = 5.4m, 5.2kt flood. 1515 MVP Taken.

MBES/SBES/SSS/MAG Seas; 0.2m Winds: 3kt WNW. Vessel: 7 kt, 880 rpm. Tide = 5.3m, 4.6kt flood.

MBES/SBES/SSS/MAG Seas; 0.2m Winds: 3kt WNW. Vessel: 2.7 kt, 1230 rpm. Tide = 5.4m, 4.2kt flood.

MBES/SBES/SSS/MAG Seas; 0.2m Winds: 2kt WNW. Vessel: 4.2 kt, 1260 rpm. Tide = 5.5m, 3.3kt flood. 16:45 MVP Taken.
Retrieve equipment.
Transit back to dock.

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	28-Jul-2015 Tue Julian Day: 209
PROSPECT / SITE:	PL001 / PL003
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 19
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

651.25 Kilometers
50.7% Complete
45,250.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	PL04_004	024.0°	213	217						Added mileage for run in/out
		AM	PL04_011	024.0°	134	138						Added mileage for run in/out
		AM	PL04_009	204.0°	135	139						Added mileage for run in/out
		AM	PL04_010	024.0°	133	137						Added mileage for run in/out
		AM	PL04_008	204.0°	141	145						Added mileage for run in/out
		AM	PL04_012	024.0°	133	137						Added mileage for run in/out
		AM	PL04_013	204.0°	135	139						Added mileage for run in/out
		AM	PL04_003	204.0°	206	210						Added mileage for run in/out

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	29-Jul-2015 Wed Julian Day: 210
PROSPECT / SITE:	PL001 / PL003
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 20
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

653.40 Kilometers
55.5% Complete
47,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	0.2	6 kts	S
Wx - 1800:	0.2	11 kts	SW
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	Toolbox
Shift Change:		
Safety:	X	MAR-TRA-015, MAR-TRA-013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0720	OW										Morning ops meeting. Dockside checks.
0720	0855	IT										Transit to PL004
0855	0930	OW										Review MRA-TRA-015. Take AML SVP. Deploy gear.
0930	0956	LT										
0956	1104	OL	PL04_005	024.0°	100	221	24.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 6kt S Vessel: 3 kt, 1170 rpm. Tide = 0.5m, 3.7kt ebb.
1104	1109	LT										
~~1109~~	~~1144~~	~~OL~~	~~PL04_006~~	~~204.0°~~	~~100~~	~~230~~	~~23.0~~	~~30.0~~	~~20.0~~			*MBES/SBES/SSS/MAG Seas; 0.2m Winds: (issue with weather station) Vessel: 6.4 kt, 900 rpm. Tide = 0.1m, 1.4kt ebb. 11:25 MVP Taken.*
1144	1154	LT										
1154	1229	OL	PL04_001	024.0°	100	187	18.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: (weather station not providing data) Vessel: 3.8 kt, 1040 rpm. Tide = 0.32m, 0.5kt flood.
1229	1233	LT										
1233	1302	OL	PL04_002	204.0°	100	172	19.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 6kt S Vessel: 4.2 kt, 980 rpm. Tide = 1.3m, 3.5kt flood.
1302	1332	E00										Navigation PC crashed (Blue screen).
1332	1358	OL	PL04_002A	204.0°	119	143	25.0	36.0	26.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 6kt S Vessel: 3.2 kt, 1170 rpm. Tide = 2.6m, 5.1kt flood. 13:43 MVP Taken.
1358	1413	LT										
1413	1448	OL	PL04_007	024.0°	100	236	22.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: (weather station not providing data) Vessel: 6.0 kt, 880 rpm. Tide = 3.5m, 5.8kt flood.
1448	1459	LT										
1459	1507	OL	PL04_016	024.0°	100	133	29.0	35.0	25.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: (weather station not providing data) Vessel: 7.3 kt, 800 rpm. Tide = 4.6m, 6.1kt flood.
1507	1530	OW										Retrieve gear.
1530	1720	IT										Transit back to dock.
1720	1750	OW										Arrive at dock. Fuel Vessel.
1750	1830	OW										Secure vessel.
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	29-Jul-2015 Wed Julian Day: 210
PROSPECT / SITE:	PL001 / PL003
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 20
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

653.40 Kilometers
55.5% Complete
47,400.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	PL04_005	024.0°	221	225						Added mileage for run in/out
		AM	PL04_006	204.0°	230	234						Added mileage for run in/out
		AM	PL04_001	024.0°	187	191						Added mileage for run in/out
		AM	PL04_002A	204.0°	100	119						Added mileage for run in due to line restart
		AM	PL04_002A	204.0°	143	147						Added mileage for run in (002)/out (002A)
		AM	PL04_007	024.0°	236	240						Added mileage for run in/out
		AM	PL04_016	024.0°	133	137						Added mileage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	30-Jul-2015 Thu Julian Day: 211
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 21
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

653.40 Kilometers
55.5% Complete
47,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - RZSonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Doug Bowlus
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	David Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	N/A	N/A	N/A
Wx - 1200:	N/A	6 kts	SW
Wx - 1800:	N/A	7 kts	SW
Wx - 2400:	N/A	N/A	N/A

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Doug Bowlus	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MAR-TRA-005
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0710	OW									
0710	1830	OW									
1830											

DETAILED SURVEY INFORMATION

0630 Morning Ops Meeting.
Arrive at vessel. Vessel maintainance and LIDAR mobilization.

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	31-Jul-2015 Fri Julian Day: 212
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 22
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

653.40 Kilometers
55.5% Complete
47,400.00 Meters Added

GEOPHYSICAL EQUIPMENT EQUIP #

Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Cody Gibson
Geophysical Tech.:	Lance Woods
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Katie Conrad
Data Processor:	David Wise
Data Processor:	Doug Bowlus
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.3	5-10	SW
Wx - 1800:	0.3	Light	Var
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Lance and Cody received a vessel orientation
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0750	OW										*Morning Ops meeting, Lidar test at dock*
0750	0758	OW										Vessel induction
0758	0800	OW										POS MV GAMS calibration
0800	0805	OW										Lidar test at dock
0805	1015	IT										Depart for Tyonek Shoreline
1015	1033	OW										Running a test line while waiting for low tide
1033	1100	OW										Waiting for low tide
1100	1118	OW										Start Lidar survey of Tyonek Shoreline, Vessel Spd:2.0kts, Depth ~3.0m, hdg 20deg
1118	1119	OW										Stop Lidar Survey, Adjust lidar software settings to account for change in shoreline
1119	1123	OW										Resume Lidar Survey, spd 2.7kts, depth ~2.5m, hdg
1123	1124	OW										Stop survey to adjust settings
1124	1310	OW										Resume lidar survey
1310	1328	OW										Move back to cove area
1328	1355	OW										Resume lidar survey in Ladd Cove
1355	1610	IT										*Transit to Cannery Lodge Dock*
1610	1830	OW										Review collected Lidar Data
1830												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	01-Aug-2015 Sat Julian Day: 213
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 23
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

653.40 Kilometers
55.5% Complete
47,400.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Cody Gibson
Geophysical Tech.:	Lance Woods
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE

Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Katie Conrad
Data Processor:	David Wise
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.3	light	Var.
Wx - 1800:	0.3	light	Var.
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MRA-TRA 011 and 013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0900	OW									
0900	0925	OW									
0925	1035	IT									
1035	1040	OW									
1040	1050	IT									
1050	1138	OW									
1138	1216	OW									
1216	1226	OW									
1226	1305	OW									
1305	1326	IT									
1326	1411	OW									
1411	1505	IT									
1505	1700	OW									
1700	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Morning Ops Meeting,
Startup and intialize Lidar software
Depart Dock
Conducted a test with Lidar, no data aquired as boat to far from shore
Transit to Jumbo Rock Area
Waiting on low tide
Start Lidar survey at Boulder Pt at north end hdg south
aground, no damage, stop survey, circle back around to and move further offshore
Resume Lidar Survey
Transit to Cannery Dock
Lidar Survey of TM34 area
Transit to Dock
Review Lidar Data
Refuel Vessel

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	02-Aug-2015 Sun Julian Day: 214
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 24
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

653.40 Kilometers
55.5% Complete
47,400.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP #	
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Dave Wise
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE

Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	n/a	n/a
Wx - 1800:	n/a	n/a	n/a
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	N/A	
Shift Change:	N/A	
Safety:	N/A	
Pre/Post Job:	N/A	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Fatigue mangement Day

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	03-Aug-2015 Mon Julian Day: 215
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 25
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

653.40 Kilometers
55.5% Complete
47,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Dave Wise
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	Light	Var
Wx - 1800:	n/a	Light	Var
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MRA-TRA-005
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0700	MD									
0700	0810	MD									
0810	0818	MD									
0818	0824	MD									
0824	0830	MD									
0830	0838	MD									
0838	0842	MD									
0842	1830	MD									
1830											

DETAILED SURVEY INFORMATION

Morning Ops Meeting
Start Lidar system
Depart dock
Start Lidar Test on Cannery Lodge Shoreline

2nd Lidar test on Cannery Lodge Shoreline
At Cannery Dock
Demob Lidar Laser Scanner System

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	04-Aug-2015 Tue Julian Day: 216
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 26
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

656.40 Kilometers
58.6% Complete
50,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	Katie Conrad
Geophysical Tech.:	Dave Wise
Other Survey Crew:	Richie Carmichael
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	SW
Wx - 1800:	0.3m	5kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:		Kelly Power
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Weekly safey meeting plus client rep received a vessel orientation
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0730	OW										Morning Ops meeting, Weekly Safety meeting
0730	0750	OW										Vessel pre start checks, Vessel Orientation for new Client Rep
0750	0930	OW										Depart Dock for Site PL04
0930	1015	OW										SS/MAG, USBL, MBES deployed and a AML SVP conducted
1015	1021	LT										Heading for line
1021	1033	OL	PL04_014	204.0°	100	137	31.0	47.0	37.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt S/V. Vessel: 4.5 kt, Tide = 5.5m, 0.4kt slack.
1033	1041	LT										
1041	1055	OL	PL04_017	024.0°	100	137	32.0	57.0	47.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt SW. Vessel: 4.2 kt, Tide = 5.0m, 0.9kt EBB.
1055	1101	LT										
1101	1113	OL	PL04_015	204.0°	100	137	32.0	37.0	27.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 4.7 kt, Tide = 4.5m, 1.6kt EBB.
1113	1122	LT										
1122	1141	OL	PL04_018	024.0°	100	137	31.0	57.0	47.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 3.5 kt, Tide = 3.9m, 2.3kt EBB.
1141	1201	LT										
1201	1211	OL	PL04_022	204.0°	100	137	41.0	40.0	30.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 5.0 kt, Tide = 2.8m, 3.6kt EBB.
1211	1224	LT										
1224	1258	OL	PL04_019	024.0°	100	138	31.0	47.0	37.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt S/V. Vessel: 1.7 kt, Tide = 2.1m, 4.1kt EBB.
1258	1314	LT										
1314	1324	OL	PL04_023	204.0°	100	137	40.0	37.0	27.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 6.3 kt, Tide = 0.9m, 4.4kt EBB.
1324	1336	LT										
1336	1407	OL	PL04_020	024.0°	100	137	30.0	53.0	43.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 2.0 kt, Tide = 0.3m, 4.3kt EBB.
1407	1428	LT										
1428	1438	OL	PL04_024	204.0°	100	137	38.0	33.0	23.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 5.5 kt, Tide = -0.4m, 3.4kt EBB.
1438	1446	LT										
1446	1512	OL	PL04_021	024.0°	100	138	40.0	51.0	41.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt SW. Vessel: 2.0 kt, Tide = -0.5m, 3.0kt EBB.
1512	1530	OW										Recover SS/MAG, MBES
1530	1700	IT										Transit to Cannery Dock
1700	1830	OW										Refuel Vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	04-Aug-2015 Tue Julian Day: 216
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 26
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 656.40 Kilometers
	58.6% Complete
	50,400.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL04_014		131	137						
		AM	PL04_017		131	137						
		AM	PL04_015		131	137						
		AM	PL04_018		131	137						
		AM	PL04_022		131	137						
		AM	PL04_019		132	138						
		AM	PL04_023		131	137						
		AM	PL04_020		131	137						
		AM	PL04_024		131	137						
		AM	PL04_021		132	138						

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Aug-2015 Wed Julian Day: 217
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 27
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

659.70 Kilometers
60.2% Complete
53,700.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Ron Eckhardt

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Kent Simpson

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	10kts	S
Wx - 1800:	0.3m	10kts	S
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	MOB Drill, Review MRA-TRA-012
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0730	OW										
0730	0812	IT										Depart Cannery Dock for PL04
0812	0814	CAL										PosMV Gams Calibration
0814	0925	IT										Resume transit to PL04
0925	0930	OW										On site
0930	0935	OW										Man Over Board Drill
0935	1005	OW										Deploy survey equipment
1005	1026	LT										Had to change PosMV Gams calibration to original Gams Cal as there was an motion artifact in the MBES data
1026	1040	OL	PL04_025	204.0°	100	131	43.0	81.0	71.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 4.0 kt, Tide = 6.0m, 0.1kt slack.
1040	1049	LT										
1049	1105	OL	PL04_028	024.0°	100	131	37.0	44.0	34.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 4.0 kt, Tide = 5.7m, 0.4kt Ebb
1105	1110	LT										
1110	1123	OL	PL04_026	204.0°	100	132	42.0	72.0	62.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 4.0 kt, Tide = 5.3m, 1.0kt Ebb
1123	1131	LT										
1131	1145	OL	PL04_029	024.0°	100	131	37.0	68.0	58.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10kt S. Vessel: 4.4 kt, Tide = 4.9m, 1.6kt Ebb
1145	1153	LT										
1153	1203	OL	PL04_027	204.0°	100	131	42.0	72.0	62.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10kt S. Vessel: 5.4 kt, Tide = 4.3m, 2.2kt Ebb
1203	1214	LT										
1214	1229	OL	PL04_030	024.0°	100	127	36.0	77.0	67.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10kt S. Vessel: 5.4 kt, Tide = 3.8m, 2.6kt Ebb, Conducted a Usvp
1229	1234	LT										
1234	1239	OL	PL04_033	204.0°	100	114	42.0	53.0	43.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10kt S. Vessel: 5.3 kt, Tide = 3.4m, 2.9kt Ebb
1239	1248	LT										
1248	1306	OL	PL04_031	024.0°	100	124	36.0	80.0	70.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 2.7kt, Tide = 2.9m, 3.0kt Ebb
1306	1311	LT										
1311	1316	OL	PL04_034	204.0°	100	111	38.0	42.0	32.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 5.2kt, Tide = 2.3m, 3.0kt Ebb
1316	1325	LT										
1325	1347	OL	PL04_032	024.0°	100	118	36.0	80.0	70.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 1.7kt, Tide = 2.0m, 2.9kt Ebb
1347	1353	LT										
1353	1355	OL	PL04_035	204.0°	100	105	35.0	38.0	28.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 5.9kt, Tide = 1.6m, 2.7kt Ebb
1355	1431	LT										
1431	1502	IF	PL03_Infill1	215.0°	100	204	37.0	32.0	22.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 5.8kt, Tide = 0.6m, 2.3kt Ebb
1502	1511	LT										

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Aug-2015 Wed Julian Day: 217
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 27
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 659.70 Kilometers
	60.2% Complete
	53,700.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1511	1548	IF	PL03_Infill2	035.0°	100	167	25.0	48.0	38.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds; 10kt S. Vessel: 2.2kt, Tide = 0.2m, 1.7kt Ebb, Conducted Usvp
1548	1605	OW										Recover Survey Gear
1605	1730	IT										Transit to dock
1730	1830	OW										At Cannery Dock
1830												
		AM	PL04_025		131	137						
		AM	PL04_028		131	137						
		AM	PL04_026		132	138						
		AM	PL04_029		131	137						
		AM	PL04_027		131	137						
		AM	PL04_030		127	133						
		AM	PL04_033		114	120						
		AM	PL04_031		124	130						
		AM	PL04_034		111	117						
		AM	PL04_032		118	124						
		AM	PL04_035		105	111						

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	06-Aug-2015 Thu Julian Day: 218
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 28
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

662.50 Kilometers
62.6% Complete
56,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	
Mag. - SeaSpy	
USBL - IXSEA GAPS	
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charle Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Ron Eckhardt

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	10kts	SW
Wx - 1800:	0.3m	10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:		Kelly Power
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA's 012 and 013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0725	OW										Morning Ops Meeting. Vessel pre-start checks
0725	0852	IT										Depart dock for PL05
0852	0930	OW										Deploy Survey Gear. Conduct AML SVP
0930	0945	LT										Heavy Lift Vessel Svenja at position N 60 56.153 W 151 09.390. Requests 1NM CPA
0945	1000	OL	PL05_002	030.0°	100	147	38.0	40.0	30.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10kt S. Vessel: 5.8 kt, Tide = 5.8m, 2.5kt Flood
1000	1013	LT										
1013	1035	OL	PL05_001	210.0°	100	126	41.0	80.0	70.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10kt S. Vessel: 2.1 kt, Tide = 6.0m, 2.3kt Flood
1035	1044	LT										
1044	1100	OL	PL05_008	210.0°	100	119	46.0	80.0	70.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10kt S. Vessel: 2.0 kt, Tide = 5.9m, 1.8kt Flood
1100	1131	LT										Extended line to maintain 1NM cpa from heavy lift vessel Svenja
1131	1142	OL	PL05_014	030.0°	100	135	26.0	31.0	21.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt S. Vessel: 5.0 kt, Tide = 5.5m, 1.0kt Flood
1142	1147	LT										
1147	1158	OL	PL05_015	210.0°	100	125	27.0	40.0	30.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt SW. Vessel: 5.0 kt, Tide = 5.3m, 0.6kt Flood, Conducted Usvp
1158	1204	LT										
1204	1211	OL	PL05_016	030.0°	100	114	27.0	32.0	22.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt SW. Vessel: 4.0 kt, Tide = 5.0m, 0.3kt Flood
1211	1234	LT										Extended line turn to survey lines in PL06
1234	1245	OL	PL06_007	030.0°	100	125	35.0	60.0	50.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt SW. Vessel: 4.0 kt, Tide = 4.5m, 0.4kt Slack
1245	1250	LT										
1250	1256	OL	PL06_004	210.0°	100	114	43.0	56.0	46.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt SW. Vessel: 4.5 kt, Tide = 4.2m, 0.9kt Ebb
1256	1321	LT										Extended line to allow vessel SAE Winward to pass across or line path
1321	1333	OL	PL06_006	030.0°	119	139	37.0	61.0	51.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 7.0kt SW. Vessel: 3.0 kt, Tide = 3.5m, 1.9kt Ebb
1333	1338	LT										
1338	1342	OL	PL06_003	210.0°	100	110	44.0	70.0	60.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10.0kt SW. Vessel: 6.0 kt, Tide = 3.1m, 2.3kt Ebb
1342	1349	LT										
1349	1403	OL	PL06_005	030.0°	100	117	38.0	71.0	61.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds: 10.0kt SW. Vessel: 3.0 kt, Tide = 3.0m, 2.6kt Ebb
1403	1412	LT										
1412	1415	OL	PL06_002	210.0°	100	107	43.0	49.0	39.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 10.0kt SW. Vessel: 6.0 kt, Tide = 2.5m, 3.1kt Ebb
1415	1425	LT										
1425	1432	OL	PL06_001	030.0°	100	104	40.0	80.0	70.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 10.0kt SW. Vessel: 3.0 kt, Tide = 2.2m, 3.3kt Ebb, Conducted Usvp
1432	1453	LT										
1453	1500	OL	PL06_008	210.0°	100	125	41.0	50.0	40.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 10.0kt SW. Vessel: 6.0 kt, Tide = 1.6m, 3.5kt Ebb
1500	1705	IT										Transit to Cannery Dock
1705	1830	OW										Fuel Vessel

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	06-Aug-2015 Thu Julian Day: 218
PROSPECT / SITE:	N/A
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 28
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

662.50 Kilometers
62.6% Complete
56,500.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1830												
		AM	PL05_002		147	151						
		AM	PL05_001		126	130						
		AM	PL05_008		119	123						
		AM	PL05_014		135	139						
		AM	PL05_015		125	129						
		AM	PL05_016		114	118						
		AM	PL06_007		125	129						
		AM	PL06_004		114	118						
		AM	PL06_006		139	143						
		AM	PL06_003		110	114						
		AM	PL06_005		117	121						
		AM	PL06_002		107	111						
		AM	PL06_001		104	108						
		AM	PL06_008		125	129						

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	07-Aug-2015 Fri Julian Day: 219	CLIENT:	AK LNG
PROSPECT / SITE:	Cook Inlet	JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	PL06
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 29	No. of SURVEY LINES:	484 — 668.30 Kilometers
CRP TO STERN:	0.00 N/A	ORIGINAL JOB TOTAL:	606,000.00 — 66.2% Complete
NAV. DIVIDE BY:	1		62,300.00 Meters Added
NAV. FIX DISTANCE:	50		
SURVEY UNITS:	Meters		
NAUTICAL MILE:	6080.0		

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BOR60273
Diff. GPS System - Trimble AG130	BOR60351
MBES - R2Sonic	BOR60363
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.1m	light	Var.
Wx - 1800:	0.3m	10kts	S
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	n/a	
Safety:	X	Review MAR-TRA-009
Pre/Post Job:	n/a	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops Meeting
0700	0900	IT										Depart Cannery Dock for Block PL06
0900	0925	IT										Arrive at PL06 but do not have new latest Bouy locations so will move to Block PL08 and start survey there
0925	0950	OW										Surveyed Equipment deployed at PL08. AML SVP conducted, good cast
0950	1001	LT										
1001	1010	OL	PL08_138	212.0°	100	117	14.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 3.8 kt, Tide = 3.4m, 3.4kt Flood (North Foreland TideStation)
1010	1015	LT										
1015	1021	OL	PL08_134	032.0°	100	115	17.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.8 kt, Tide = 3.7m, 3.4kt Flood
1021	1028	LT										
1028	1038	OL	PL08_139	212.0°	100	117	14.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 3.4 kt, Tide = 3.8m, 3.3kt Flood
1038	1042	LT										
1042	1048	OL	PL08_135	032.0°	100	115	16.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.3 kt, Tide = 4.2m, 3.2kt Flood
1048	1055	LT										
1055	1103	OL	PL08_140	212.0°	100	117	13.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 3.7 kt, Tide = 4.5m, 3.0kt Flood
1103	1108	LT										
1108	1115	OL	PL08_136	032.0°	100	115	15.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.6 kt, Tide = 4.7m, 2.9kt Flood
1115	1120	LT										
1120	1128	OL	PL08_141	212.0°	100	116	12.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 3.9 kt, Tide = 4.9m, 2.7kt Flood
1128	1132	LT										
1132	1139	OL	PL08_137	032.0°	100	115	15.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 3.9 kt, Tide = 5.0m, 2.6kt Flood
1139	1143	LT										
1143	1150	OL	PL08_142	212.0°	100	113	12.0	18.0	8.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 3.9 kt, Tide = 5.2m, 2.5kt Flood
1150	1156	LT										
1156	1203	OL	PL08_129	032.0°	100	114	21.0	22.0	12.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.0 kt, Tide = 5.2m, 2.3kt Flood, Conducted USVP
1203	1207	LT										
1207	1215	OL	PL08_133	212.0°	100	115	20.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.0 kt, Tide = 5.3m, 2.2kt Flood
1215	1219	LT										
1219	1227	OL	PL08_128	032.0°	100	114	22.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 3.8 kt, Tide = 5.4m, 2.0kt Flood
1227	1232	LT										
1232	1238	OL	PL08_132	212.0°	100	115	22.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.3 kt, Tide = 5.4m, 1.9kt Flood
1238	1241	LT										
1241	1248	OL	PL08_127	032.0°	100	114	23.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.2 kt, Tide = 5.4m, 1.7kt Flood
1248	1252	LT										

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	07-Aug-2015 Fri Julian Day: 219			CLIENT:	AK LNG
PROSPECT / SITE:	Cook Inlet			JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack			AREA & BLOCK:	PL06
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly
JOB DAY #:	Day: 29	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	484 668.30 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	606,000.00 66.2% Complete
		NAUTICAL MILE:	6080.0		62,300.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1252	1258	OL	PL08_131	212.0°	100	115	23.0	32.0	22.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.7 kt, Tide = 5.4m, 1.4kt Flood
1258	1302	LT										
1302	1309	OL	PL08_126	032.0°	100	114	34.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt SW. Vessel: 4.4 kt, Tide = 5.3m, 1.2kt Flood
1309	1313	LT										
1313	1319	OL	PL08_130	212.0°	100	115	24.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 4.4 kt, Tide = 5.3m, 0.9kt Flood
1319	1326	LT										
1326	1334	OL	PL08_121	032.0°	100	115	26.0	26.0	16.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 3.6 kt, Tide = 5.3m, 0.5kt Flood
1334	1337	LT										
1337	1344	OL	PL08_125	212.0°	100	115	23.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 4.7 kt, Tide = 5.2m, 0.1kt Flood
1344	1348	LT										
1348	1356	OL	PL08_120	032.0°	100	115	26.0	32.0	22.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 3.8 kt, Tide = 5.1m, 0.2kt Ebb
1356	1359	LT										
1359	1406	OL	PL08_124	212.0°	100	114	24.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 4.5 kt, Tide = 5.0m, 0.5kt Ebb
1406	1411	LT										
1411	1422	OL	PL08_119	032.0°	100	116	25.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 3.2 kt, Tide = 4.8m, 0.9kt Ebb
1422	1425	LT										
1425	1430	OL	PL08_123	212.0°	100	114	24.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 5.0 kt, Tide = 4.7m, 1.3kt Ebb
1430	1434	LT										
1434	1445	OL	PL08_118	032.0°	100	115	25.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 2.8 kt, Tide = 4.5m, 1.4kt Ebb, Conducted a JSVP
1445	1449	LT										
1448	1454	OL	PL08_122	212.0°	100	115	24.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 5.4 kt, Tide = 4.4m, 1.7kt Ebb
1454	1501	LT										
1501	1512	OL	PL08_114	032.0°	100	116	26.0	33.0	23.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 2.8 kt, Tide = 4.2m, 2.2kt Ebb
1512	1515	LT										
1515	1520	OL	PL08_117	212.0°	100	115	27.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 5.3 kt, Tide = 4.0m, 2.5kt Ebb
1520	1525	LT										
1525	1537	OL	PL08_113	032.0°	100	117	26.0	35.0	25.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 2.9 kt, Tide = 3.8m, 2.7kt Ebb
1537	1539	LT										
1539	1545	OL	PL08_116	212.0°	100	116	27.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt WSW. Vessel: 5.3 kt, Tide = 3.5m,3.0kt Ebb
1545	1600	OW										Recover Survey Gear
1600	1800	IT										Transit To Dock, Vessel made good speed on the way back to dock took 2.25hrs this morning vs 2.0 hrs this evening.
1800	1830	OW										Secure vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	07-Aug-2015 Fri Julian Day: 219			CLIENT:	AK LNG
PROSPECT / SITE:	Cook Inlet			JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack			AREA & BLOCK:	PL06
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly
JOB DAY #:	Day: 29	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	484 668.30 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	606,000.00 66.2% Complete
		NAUTICAL MILE:	6080.0		62,300.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL08_136	212.0°	117	121						Added mileage for Run in/out
		AM	PL08_134	032.0°	115	119						Added mileage for Run in/out
		AM	PL08_139	212.0°	117	121						Added mileage for Run in/out
		AM	PL08_135	032.0°	115	119						Added mileage for Run in/out
		AM	PL08_140	212.0°	117	121						Added mileage for Run in/out
		AM	PL08_136	032.0°	115	119						Added mileage for Run in/out
		AM	PL08_141	212.0°	116	120						Added mileage for Run in/out
		AM	PL08_137	032.0°	115	119						Added mileage for Run in/out
		AM	PL08_142	212.0°	113	117						Added mileage for Run in/out
		AM	PL08_129	032.0°	114	118						Added mileage for Run in/out
		AM	PL08_133	212.0°	115	119						Added mileage for Run in/out
		AM	PL08_128	032.0°	114	118						Added mileage for Run in/out
		AM	PL08_132	212.0°	115	119						Added mileage for Run in/out
		AM	PL08_127	032.0°	114	118						Added mileage for Run in/out
		AM	PL08_131	212.0°	115	119						Added mileage for Run in/out
		AM	PL08_126	032.0°	114	118						Added mileage for Run in/out
		AM	PL08_130	212.0°	115	119						Added mileage for Run in/out
		AM	PL08_121	032.0°	115	119						Added mileage for Run in/out
		AM	PL08_125	212.0°	115	119						Added mileage for Run in/out
		AM	PL08_120	032.0°	115	119						Added mileage for Run in/out
		AM	PL08_124	212.0°	114	118						Added mileage for Run in/out
		AM	PL08_119	032.0°	116	120						Added mileage for Run in/out
		AM	PL08_123	212.0°	114	118						Added mileage for Run in/out
		AM	PL08_118	032.0°	115	119						Added mileage for Run in/out
		AM	PL08_122	212.0°	115	119						Added mileage for Run in/out
		AM	PL08_114	032.0°	116	120						Added mileage for Run in/out
		AM	PL08_117	212.0°	115	119						Added mileage for Run in/out
		AM	PL08_113	032.0°	117	121						Added mileage for Run in/out
		AM	PL08_116	212.0°	116	120						Added mileage for Run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	08-Aug-2015 Sat Julian Day: 220
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 30
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	PL06
R/V:	Westerly
No. of SURVEY LINES:	484

668.30 Kilometers
66.2% Complete
62,300.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE

Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	1.0m-1.5m	15-20kts	SW
Wx - 1800:	n/a	10-15kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox Talk
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-013 Refuelling Vessel
Pre/Post Job:	N/A	

LINE INFORMATION

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0700	OW									
0700	0720	WS									
0720	0805	IT									
0805	0905	WS									
0905	0915	WS									
0915	0920	WS									
0920	1040	WS									
1040	1200	WS									
1200	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Morning Ops meeting
Waiting on tide to rise to depart thru Kenai River
Depart Cannery Dock
Returning to dock due to poor weather conditions Seas 3'-5', winds 10-15 kts S
At commercial dock to take on water and hose down vessel decks
At Cannery Dock
Survey Equipment Maintenance
Refuel vessel
Scheduled maintenance on vessel engines conducted

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	09-Aug-2015 Sun Julian Day: 221
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 31
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	PL06
R/V:	Westerly
No. of SURVEY LINES:	484

669.30 Kilometers
68.8% Complete
63,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	10kts	S
Wx - 1800:	1.0m	10-15kts	S
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-005
Pre/Post Job:	N/A	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0835	WS										Waiting on tide to rise to depart Kenai River
0835	0922	IT										Depart Cannery Dock
0922	1035	IT										Transit to Site slower than normal as tide slowing vessel speed
1035	1105	OW										Survey Equipment deployed, AML SVP conducted
1105	1109	LT										
1109	1130	OL	PL05_000	030.0°	100	168	33.0	32.0	23.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt S. Vessel: 5.0 kt, Tide = 2.8m, 1.9kt Flood (East Foreland TideStation)
1130	1141	LT										
1141	1226	OL	PL05_010	210.0°	100	167	23.0	32.0	22.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt S. Vessel: 2.2 kt, Tide = 3.5m, 2.1kt Flood (East Foreland TideStation)
1226	1236	LT										
1236	1326	OL	PL05_003	210.0°	100	162	31.0	51.0	41.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds:10kt S. Vessel: 2.2 kt, Tide = 4.5m, 2.6kt Flood (East Foreland TideStation)
1326	1331	LT										
1331	1406	OL	PL05_007	030.0°	100	203	39.0	42.0	32.0			MBES/SBES/SSS/MAG Seas; 0.4m Winds:10kt S. Vessel: 5.2 kt, Tide = 5.1m, 2.6kt Flood (East Foreland TideStation), Vessel crabbing 15deg
1406	1420	LT										
1420	1442	OL	PL05_013	210.0°	100	144	27.0	46.0	36.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds:10-15kt S. Vessel: 5.2 kt, Tide = 5.2m, 3.2kt Flood (East Foreland TideStation)
1442	1500	OW										Recover survey Equipment as wind a seas inceasing. Small craft warning for lower inlet another line would take 1hr to complete. Prudent to depart area now
1500	1710	IT										At Cannery Dock
1710	1830	OW										
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	09-Aug-2015 Sun Julian Day: 221
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 31
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	PL06
R/V:	Westerly
No. of SURVEY LINES:	484 669.30 Kilometers
	68.8% Complete
	63,300.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL05_009	030.0°	168	172						Added mileage for Run in/out
		AM	PL05_010	210.0°	167	171						Added mileage for Run in/out
		AM	PL05_003	210.0°	162	166						Added mileage for Run in/out
		AM	PL05_007	030.0°	203	207						Added mileage for Run in/out
		AM	PL05_013	210.0°	144	148						Added mileage for Run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	10-Aug-2015 Mon Julian Day: 222
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 32
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

669.30 Kilometers
68.8% Complete
63,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	20-25kts	S
Wx - 1200:	n/a	15kts	S
Wx - 1800:	n/a	10-15kts	E
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	None	
Shift Change:	N/A	
Safety:	No	
Pre/Post Job:	N/A	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0000	0630	WS									
0630	0631	WS									
0631	1100	WS									
1100	1200	WS									
1200	1800	WS									
1800											

DETAILED SURVEY INFORMATION

Morning Ops Meeting
Weather conditions are poor, 20-25kts with seas at 6'
Wind still 20kts from the south, Given transit time to and from site vessel will not sail to Survey Site today
Winds are 15kts from the South
Waiting on weather

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	11-Aug-2015 Tue Julian Day: 223
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 33
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

669.30 Kilometers
68.8% Complete
63,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	10kts	N
Wx - 1800:	n/a	10kts	N
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Weekly Safety Meeting, Fugro "I"power presentation
Pre/Post JOB:	N/A	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0000	0730	OW									
0730	1830	E103									
1830											

DETAILED SURVEY INFORMATION

Weekly safety meeting
Vessel conducted maintanance on Stbd Main Engine

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	12-Aug-2015 Wed Julian Day: 224
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 34
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

671.10 Kilometers
72.5% Complete
65,100.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.2m	5kts	N
Wx - 1800:	0.2m	10kts	W
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	SS/Mag obstruction on botton drill, Review MAR-TRA-013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0715	OW										Vessel pre-start checks
0715	0740	IT										Depart Cannery Dock for PL05 Site
0740	0745	IT										At mouth of River
0745	0850	IT										Main inlet to site PL05
0850	0920	OW										Survey Gear deployed
0920	0942	LT										
0942	1044	OL	PL05_006	030.0°	100	192	36.0	78.0	68.0			MBES/SBES/SSS/MAG Seas; 0.2m Winds: 5kt S/W. Vessel: 2.0 kt, Tide = 0.5m, 2.8kt Ebb (East Foreland TideStation)
1044	1049	LT										
1049	1116	OL	PL05_005	210.0°	100	181	19.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt W. Vessel: 5.5 kt, Tide = -0.1m, 1.3kt Ebb , Vessel crabbing downline
1116	1124	LT										Conducted drill where a large obstruction was on bottom and evasive was taken to ensure SS/MAG fish did not hit it
1124	1201	OL	PL05_004	030.0°	100	172	33.0	58.0	48.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt W. Vessel: 2.7 kt, Tide = 0.0m, 0.3kt Ebb
1201	1208	LT										
1208	1228	OL	PL05_012	030.0°	100	155	15.0	26.0	16.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt NW. Vessel: 4.4 kt, Tide = 0.5m, 0.5kt Ebb, Conducted a USVP
1228	1235	LT										
1235	1320	OL	PL05_011	210.0°	100	165	23.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt NW. Vessel: 4.0 kt, Tide = 0.9m, 0.4kt Flood
1320	1338	LT										Extended line to head to PL07 and survey in that block area as PL05 is complete
1338	1352	OL	PL07_004	030.0°	100	143	22.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt NW. Vessel: 5.3 kt, Tide = 2.4m, 1.9kt Flood
1352	1402	LT										
1402	1434	OL	PL07_003	210.0°	100	132	24.0	35.0	25.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt W. Vessel: 2.2 kt, Tide = 3.0m, 2.4kt Flood
1434	1441	LT										
1441	1447	OL	PL07_002	030.0°	100	122	26.0	24.0	14.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt W. Vessel: 6.9 kt, Tide = 4.0m, 3.1kt Flood
1447	1501	LT										Conducted USVP
1501	1512	OL	PL07_001	210.0°	100	115	26.0	47.0	37.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt W. Vessel: 2.0 kt, Tide = 4.6m, 3.3kt Flood
1512	1523	OW										Recover Survey equipment
1523	1710	IT										Transit to Cannery Dock
1710	1830	OW										Refuel Vessel
1830												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	12-Aug-2015 Wed Julian Day: 224
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 34
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 671.10 Kilometers
	72.5% Complete
	65,100.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL05_006	030.0°	192	196						Added Mileage for run in/out
		AM	PL05_005	210.0°	181	185						
		AM	PL05_004	030.0°	172	176						
		AM	PL05_012	030.0°	155	159						
		AM	PL05_011	210.0°	165	169						
		AM	PL07_004	030.0°	143	147						
		AM	PL07_003	210.0°	132	136						
		AM	PL07_002	030.0°	122	126						
		AM	PL07_001	210.0°	111	115						

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	13-Aug-2015 Thu Julian Day: 225
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 35
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

672.90 Kilometers
74.9% Complete
66,900.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.1m	0kts	NW
Wx - 1800:	0.2m	5kts	NW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-006
Pre/Post Job:	N/A	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0710	OW										Vessel Pre-Start Checks
0710	0905	IT										Transit to PL04
0905	0915	OW										Deploy MBES. Conduct AML SVP, good cast
0915	0925	LT										
0925	0958	IF	PL04_INFILL1	024.0°	100	156	21.0	na	na			MBES,SBES only , infill line
0958	1130	OW										Move to PL06
1130	1140	OW										Deploy Towfish
1140	1210	LT										
1210	1229	OL	PL06_011	030.0°	100	126	33.0	66.0	56.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 0kt NW. Vessel: 2.0 kt, Tide = -0.1m, 1.7kt Ebb (East Foreland Tide Station)
1229	1236	LT										Conducted a USVP
1236	1244	OW	PL06_008A	210.0°	100	124	38.0	37.0	27.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 0kt NW. Vessel: 6.0 kt, Tide = 0.2m, 0.9kt Ebb (East Foreland Tide Station)
1244	1253	LT										
1253	1306	OL	PL06_012	030.0°	100	126	35.0	77.0	67.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 0kt NW. Vessel:3.8 kt, Tide = 0.5m, 0.3kt Ebb (East Foreland Tide Station)
1306	1312	LT										
1312	1321	OL	PL06_009	210.0°	100	123	39.0	61.0	51.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 0kt NW. Vessel:3.8 kt, Tide = 0.8m, 0.3kt Flood (East Foreland Tide Station)
1321	1327	LT										
1327	1337	OL	PL06_013	030.0°	100	129	35.0	65.0	55.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 0kt NW. Vessel:4.4 kt, Tide = 1.2m, 0.6kt Flood (East Foreland Tide Station)
1337	1344	LT										
1344	1355	OL	PL06_010	210.0°	100	125	41.0	69.0	59.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 0kt NW. Vessel:4.2 kt, Tide = 1.6m, 1.2kt Flood (East Foreland Tide Station)
1355	1404	LT										
1404	1422	OL	PL06_016	030.0°	100	157	36.0	48.0	38.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt NW. Vessel:5.1 kt, Tide = 2.1m, 1.8kt Flood (East Foreland Tide Station)
1422	1443	LT										
1443	1504	OL	PL06_014	210.0°	100	131	39.0	81.0	71.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt NW. Vessel:2.5 kt, Tide = 3.3m, 2.6kt Flood (East Foreland Tide Station)
1504	1510	LT										
1510	1521	OL	PL06_015	030.0°	100	136	37.0	37.0	27.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt NW. Vessel:5.5 kt, Tide = 4.0m, 3.0kt Flood (East Foreland Tide Station)
1521	1528	LT										
1528	1547	OL	PL06_024	030.0°	100	170	29.0	29.0	19.0			MBES/SBES/SSS/MAG Seas; 0.1m Winds: 5kt NW. Vessel:5.5 kt, Tide = 4.5m, 3.3kt Flood (East Foreland Tide Station)
1547	1600	OW										Recover survey equipment
1600	1810	IT										Transit to Cannery Dock
1810	1830	OW										Secure vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	13-Aug-2015 Thu Julian Day: 225
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 35
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 672.90 Kilometers
	74.9% Complete
	66,900.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL06_011	030.0°	126	130						Added Mileage for Run in/out
			PL06_008A	210.0°	124	128						Do not include as it was previously ran
		AM	PL06_012	030.0°	126	130						Added Mileage for Run in/out
		AM	PL06_009	210.0°	123	127						Added Mileage for Run in/out
		AM	PL06_013	030.0°	129	133						Added Mileage for Run in/out
		AM	PL06_010	210.0°	125	129						Added Mileage for Run in/out
		AM	PL06_016	030.0°	157	161						Added Mileage for Run in/out
		AM	PL06_014	210.0°	131	135						Added Mileage for Run in/out
		AM	PL06_015	030.0°	136	140						Added Mileage for Run in/out
		AM	PL06_0124	030.0°	170	174						Added Mileage for Run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	14-Aug-2015 Fri Julian Day: 226
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 36
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 673.30 Kilometers
	76.7% Complete
	67,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.6m	5-10kts	SW
Wx - 1800:	n/a	10kts	SW
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:		Kelly Power
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA-013, 1 HOC card for a safe act
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0905	IT										Depart Cannery Dock for PL06
0905	0930	OW										Deploy survey Equipment, Conduct an AML SVP
0930	0942	LT										Current is very strong today, expected to reach peak of 4.3kts@221deg by 11am
0942	1147	OL	PL06_017	030.0°	100	211	37.0	81.0	71.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 10kt SW. Vessel: 1.9 kt, Tide = 4.0m, 3.6kt Ebb (North Foreland Tide Station), Conducted usvp online
1147	1203	LT										
1203	1236	OL	PL06_019	210.0°	100	220	27.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 10kt SW. Vessel: 6.6 kt, Tide = 0.2m, 1.2kt Ebb (North Foreland Tide Station)
1236	1245	LT										
1245	1300	OW										Recover survey equipment
1300	1500	IT										Transit to Dock
1500	1640	OW										Fuel Vessel
1640	1830	OW										Secured Vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	14-Aug-2015 Fri Julian Day: 226
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 36
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 673.30 Kilometers
	76.7% Complete
	67,300.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL06_017	030.0°	211	215						Added Mileage for Run in/out
		AM	PL06_018	210.0°	220	224						Added Mileage for Run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	15-Aug-2015 Sat Julian Day: 227
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 37
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

673.30 Kilometers
76.7% Complete
67,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	n/a	n/a
Wx - 1800:	n/a	n/a	n/a
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	No	
Shift Change:	N/A	
Safety:	No	
Pre/Post Job:	N/A	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0000	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Fatigue Management Day, No operations

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	16-Aug-2015 Sun Julian Day: 228
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 38
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

673.30 Kilometers
76.7% Complete
67,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valkonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	n/a	n/a	n/a
Wx - 1800:	n/a	n/a	n/a
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power
Toolbox:	No
Shift Change:	N/A
Safety:	No
Pre/Post Job:	No

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Fatigue Management Day

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	17-Aug-2015 Mon Julian Day: 229
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 39
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

673.70 Kilometers
78.3% Complete
67,700.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	Ezrah Schraven
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Kent Simpson

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.6m	10kts	NE
Wx - 1800:	1.0m	10-15kts	NE
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Vessel orientation for Ezrah, Review TRA-MAR-012
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops Meeting
0700	0720	OW										Vessel pre-start checks, vessel orientation for Ezrah
0720	0925	IT										Depart Cannery Dock for survey sites
0925	0935	OW										Deploy MBES, Conduct AML SVP
0935	0945	LT										
0945	0947	OW	Sandwave_Test01	209.0°	100	108		n/a	n/a			MBES/SBES only line
0947	1010	E372										*POS MV lost differential, POS MV was reset*
1010	1013	OW	sandwave_Test02	029.0°	100	109		n/a	n/a			MBES/SBES only line
1013	1022	LT										
1022	1023	OW	Sandwave_test03	209.0°	100	109		n/a	n/a			MBES/SBES only line
1023	1030	LT										
1030	1033	OW	Sandwave_test04	209.0°	100	108		n/a	n/a			MBES/SBES only line
1033	1100	OW										Recover MBES, Transit to PL06
1100	1120	OW										Survey equipment deployed
1120	1131	LT										Current very strong and expected to peak at 4.5kts arounf 1pm
1131	1405	OL	PL06_019	030.0°	100	215	36.0	68.0	58.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 10kt NE. Vessel: 1.5 kt, Tide = 3.8m, 3.5kt Ebb (North Forelanc Tide Station), Conducted USVP
1405	1411	LT										
1411	1439	OL	PL06_020	210.0°	100	210	25.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 10kt NE. Vessel: 6.8 kt, Tide = 0.2m, 3.4kt Ebb (North Forelanc Tide Station),
1439	1446	LT										
1446	1502	WS	PL06_021	030.0°	100	118	32.0	47.0	37.0		DNP	MBES/SBES/SSS/MAG Seas; 1.0m Winds: 10kt NE. Vessel: 2.1 kt, Tide = -0.2m, 2.8kt Ebb (North Forelard Tide Station), Aborted line due to weath
1502	1520	OW										Seas and winds increased while online. Aborted line due to weather. Recover survey equipment
1520	1745	IT										Transit to Cannery Dock
1745	1830	WS										Alongside Dock
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	17-Aug-2015 Mon Julian Day: 229
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 39
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 673.70 Kilometers
	78.3% Complete
	67,700.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL06_019	030.0°	215	219						Added mileage for Run in/out
		AM	PL06_020	210.0°	210	214						Added mileage for Run in/out
			PL06_021	030.0°	118	120						Added mileage for Run in/out

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	18-Aug-2015 Tue Julian Day: 230
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 40
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

674.30 Kilometers
80.5% Complete
68,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.6m	10kts	S
Wx - 1800:	1.0m	15kts	W
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHS-Toolbox
Shift Change:	N/A	
Safety:	Yes	Fire Drill Exercise, Review MAR-TRA-013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0730	OW										Morning Ops meeting
0730	0800	OW										Weekly Safety Meeting, vessel visit by Fugro Global HSE Rep
0800	1000	IT										Depart Cannery Dock for Survey Site PL06
1000	1025	OW										Deploy Survey Equipment, Conducted AML SVP
1025	1033	LT										
1033	1105	OL	PL06_021A	210.0°	100	204	29.0	33.0	23.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 10kt SW. Vessel: 4.7 kt, Tide = 5.8m, 0.4kt Ebb (North Foreland Tide Station)
1105	1110	LT										
1110	1213	OL	PL06_022	030.0°	100	198	35.0	75.0	65.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 10kt S. Vessel: 3.4 kt, Tide = 5.1m, 1.7kt Ebb (North Foreland Tide Station)
1213	1217	LT										
1217	1220	OW	PL06_023	210.0°	100	122	31.0	29.0	19.0		DNP	MBES/SBES/SSS/MAG Seas, 0.6m Winds: 10kt S. Vessel: 6.0 kt, Tide = 3.5m, 3.5kt Ebb (North Foreland Tide Station) Line aborted
1220	1240	LT										Aborted line due to strong current, sea conditions combining to make vessel sail perpendicular down line
1240	1401	OL	PL06_023A	030.0°	100	191	32.0	65.0	55.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 10kt S. Vessel: 2.0 kt, Tide = 2.9m, 4.0kt Ebb (North Foreland Tide Station), Conducted Usvp
1401	1415	OW										Recover survey equipment
1415	1509	IT										Transit to TM05
1509	1521	OW										Deploy MBES and conduct USVP
1521	1522	OW	Boulder_test_01	214.0°	100	107	21.0	na	na			MBES Only test/infill line
1522	1525	LT										
1525	1527	OW	boulder_test_02	034.0°	100	106	22.0	na	na			MBES only test/infill line
1527	1535	OW										Recover MBES
1535	1545	IT										Fire Drill
1545	1650	IT										At dock,
1650	1930	OW										Vessel fueling completed
1930												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	18-Aug-2015 Tue Julian Day: 230
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 40
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

674.30 Kilometers
80.5% Complete
68,300.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
		AM	PL06_021A	210.0°	204	208						Added mileage for Run in/out
		AM	PL06_022	030.0°	198	202						Added mileage for Run in/out
			PL06_023	210.0°	000	000						Do not use
		AM	PL06_023A	030.0°	191	195						Added mileage for Run in/out

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	19-Aug-2015 Wed Julian Day: 231
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 41
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

675.30 Kilometers
83.6% Complete
69,300.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	E
Wx - 1800:	n/a	5kts	E
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-006 and 013
Pre/Post Job:	None	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning ops Meeting
0700	0710	OW										Pre-Start checks
0710	0820	IT										Depart Cannery Dock for PL07
0820	0835	OW										At PL05, Deploy MBES, conduct AML SVP
0835	0840	OW										
0840	0842	OW	boulder_test_01b	034.0°	100	106						MBES only line
0842	0845	LT										
0845	0847	OW	boulder_test_01c	214.0°	100	106						MBES only line
0847	0856	OW										MBES RECOVERED
0856	1005	IT										Transit to PL07
1005	1028	OW										Deploy Survey Equipment
1028	1114	OL	PL07_011	210.0°	100	239	33.0	52.0	42.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 10kt NW. Vessel: 4.5 kt, Tide = 6.0m, 0.8kt Flood (North Foreland Tide Station)
1114	1119	LT										MAG HIT AT 1035 AT SP 116
1119	1213	OL	PL07_010	030.0°	100	168	25.0	35.0	25.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt NW. Vessel: 2.6 kt, Tide = 5.3m, 0.7kt Ebb, Conducted a USVP
1213	1221	LT										
1221	1238	OL	PL07_009	210.0°	100	166	23.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E. Vessel: 6.0 kt, Tide = 4.1m, 2.4kt Ebb
1238	1246	LT										
1246	1406	OL	PL07_008	030.0°	100	168	25.0	34.0	24.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E. Vessel: 2.0 kt, Tide = 3.6m, 3.1kt Ebb
1406	1411	LT										Peak current of 4.1kts at 1406
1411	1429	OL	PL07_007	210.0°	100	167	21.0	20.0	10.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt NE. Vessel: 5.7 kt, Tide = 1.8m, 4.0kt Ebb, Vessel crabbing downline,Conducted Usvp
1429	1445	OW										Survey Equipment recovered
1445	1630	IT										Transit to dock to refuel vessel
1630	1730	OW										Equiepment maintenance, changeout batteries in USVP, check over SS fish cables, fins
1730	1830	OW										Fuel vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	19-Aug-2015 Wed Julian Day: 231
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 41
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

675.30 Kilometers
83.6% Complete
69,300.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL07_011	210.0°	239	243						Added mileage for Run in/out
		AM	PL07_010	030.0°	168	172						Added mileage for Run in/out
		AM	PL07_009	210.0°	166	170						Added mileage for Run in/out
		AM	PL07_008	030.0°	168	172						Added mileage for Run in/out
		AM	PL07_007	210.0°	167	171						Added mileage for Run in/out

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	20-Aug-2015 Thu Julian Day: 232	CLIENT:	AK LNG
PROSPECT / SITE:	Cook Inlet	JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	Pipeline
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 42	No. of SURVEY LINES:	484 676.70 Kilometers
CRP TO STERN:	0.00 N/A		88.4% Complete
			70,700.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.3m	5kts	NE
Wx - 1800:	0.3m	5kts	N
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA-006
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0710	OW										Vessel Pre-start checks
0710	0930	IT										Depart Cannery Dock for PL07
0930	0940	OW										Deploy Survey mbes, AML SVP
0940	0955	E196										2nd AML svp
0955	1005	OW										Deploy SS/MAG
1005	1011	LT										
1011	1102	OL	PL07_012	030.0°	100	230	28.0	34.0	24.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt N. Vessel: 4.6 kt, Tide = 5.7m, 1.6kt Flood (North Foreland Tide Station)
1102	1103	LT										
1103	1155	OL	PL07_013	210.0°	100	217	35.0	41.0	31.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt N. Vessel: 3.8 kt, Tide = 5.1m, 0.5kt Flood (North Foreland Tide Station)
1155	1202	LT										Mag Hit at SP172
1202	1254	OL	PL07_014	030.0°	100	209	23.0	34.0	24.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt NE. Vessel: 3.8 kt, Tide = 4.9m, 0.7kt Ebb (North Foreland Tide Station)
1254	1303	LT										Extended line turn to allow vessel with a tow to pass thru PL07 site area
1303	1332	OL	PL07_015	210.0°	100	198	32.0	31.0	21.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt NE. Vessel: 5.5 kt, Tide = 3.9m, 2.2kt Ebb (North Foreland Tide Station)
1332	1352	LT										Mag Hit at SP171, 179
1352	1506	OL	PL07_016	030.0°	100	166	25.0	35.0	25.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 10kt NW. Vessel: 1.5 kt, Tide = 3.0m, 3.2kt Ebb (North Foreland Tide Station)
1506	1525	LT										
1525	1542	OL	PL07_017	210.0°	100	167	29.0	29.0	19.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt N. Vessel: 6.0 kt, Tide = 1.6m, 3.3kt Ebb (North Foreland Tde Station)
1542	1555	LT										Mag hit at SP 125
1555	1616	OL	PL07_006	210.0°	100	166	30.0	29.0	19.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt N. Vessel: 6.0 kt, Tide = 1.6m, 3.3kt Ebb (North Foreland Tde Station)
1616	1630	OW										Recover survey equipment
1630	1815	IT										Transit to Cannery Dock
1815												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	20-Aug-2015 Thu Julian Day: 232
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 42
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 676.70 Kilometers
	88.4% Complete
	70,700.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL07_012	030.0°	230	234						Added mileage for Run in/out
		AM	PL07_013	210.0°	217	221						
		AM	PL07_014	030.0°	209	213						
		AM	PL07_015	210.0°	198	202						
		AM	PL07_016	030.0°	166	170						
		AM	PL07_017	210.0°	167	171						
		AM	PL07_006	210.0°	166	170						

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	21-Aug-2015 Fri Julian Day: 233	CLIENT:	AK LNG
PROSPECT / SITE:		JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack	AREA & BLOCK:	Pipeline
FUGRO JOB #:	23.00007123	R/V:	Westerly
JOB DAY #:	Day: 43	No. of SURVEY LINES:	484 — 680.30 Kilometers
CRP TO STERN:	0.00 N/A	ORIGINAL JOB TOTAL:	606,000.00 — 90.8% Complete
NAV. DIVIDE BY:	1		74,300.00 Meters Added
NAV. FIX DISTANCE:	50		
SURVEY UNITS:	Meters		
NAUTICAL MILE:	6080.0		

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.6m	5kts	NW
Wx - 1800:	n/a	5kts	nw
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA-013
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops Meeting
0700	0710	OW										Pre-Start Checks
0710	0855	IT										Depart Cannery dock for PL07
0855	0935	IT										Conditions aare marginal at PL07 transit to Site PL08
0935	0955	OW										Deploy survey equipment
0955	1001	LT										
1001	1009	OL	PL08_115	032.0°	100	117	26.0	26.0	16.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NW. Vessel: 5.0 kt, Tide = 5.0m, 2.4kt Flood (North Forelard Tide Station)
1008	1013	LT										
1013	1021	OL	PL08_109	212.0°	100	117	27.0	44.0	34.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NW. Vessel: 4.1 kt, Tide = 5.0m, 2.1kt Flood (North Forelard Tide Station), Conducted usvp
1021	1025	LT										
1025	1031	OL	PL08_112	032.0°	100	116	27.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NW. Vessel:5.0 kt, Tide = 5.1m, 1.9kt Flood (North Foreland Tide Station)
1031	1034	LT										
1034	1044	OL	PL08_108	212.0°	100	117	27.0	38.0	28.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NW. Vessel:3.7 kt, Tide = 5.2m, 1.7kt Flood (North Foreland Tide Station)
1044	1046	LT										
1046	1055	OL	PL08_111	032.0°	100	117	28.0	27.0	17.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NW. Vessel:4.0 kt, Tide = 5.2m, 1.5kt Flood (North Foreland Tide Station)
1055	1059	LT										
1059	1108	OL	PL08_107	212.0°	100	117	27.0	36.0	26.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NW. Vessel:3.7 kt, Tide = 5.2m, 1.3kt Flood (North Foreland Tide Station)
1108	1111	LT										
1111	1121	OL	PL08_110	032.0°	100	117	29.0	28.0	18.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NW. Vessel:3.9 kt, Tide = 5.2m, 1.1kt Flood (North Foreland Tide Station)
1121	1123	LT										
1123	1132	OL	PL08_106	212.0°	100	117	26.0	36.0	26.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt NW. Vessel:3.9 kt, Tide = 5.2m, 0.9kt Flood (North Foreland Tide Station)
1132	1137	LT										
1137	1146	OL	PL08_102	032.0°	100	117						MBES/SBES/SSS/MAG Seas; 0.6m Winds: 5kt NW. Vessel:3.8 kt, Tide = 5.1m, 0.8kt Flood (North Foreland Tide Station)
1146	1150	LT										
1150	1157	OW	PL08_105	212.0°	100	117	26.0	30.0	20.0			MBES/SBES/SSS/MAG Seas: 0.6m Winds: 5kt NW. Vessel:4.4kt. Tide = 5.0m. 0.5kt Flood (North Forelanc Tide Station). No Sidescan data recorde
1157	1203	LT										
1203	1213	OL	PL08_101	032.0°	100	118	29.0	36.0	26.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 5kt NW. Vessel:3.7kt, Tide = 5.0m, 0.3kt Flood (North Forelanc Tide Station)
1213	1218	LT										Long period swell causing tugging on SS fish but data is still good
1218	1226	OL	PL08_105A	212.0°	100	117	25.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 5kt NW. Vessel:4.4kt, Tide = 4.9m, 0.0kt Slack (North Foreland Tide Station)
1226	1232	LT										
1232	1244	OL	PL08_100	032.0°	100	117	30.0	34.0	24.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 5kt NE. Vessel:2.9kt, Tide = 4.8m, 0.3kt Ebb (North Foreland Tide Station)
1244	1248	LT										
1248	1254	OL	PL08_104	212.0°	100	118	24.0	29.0	19.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 10kt NE. Vessel:2.9kt, Tide = 4.5m, 0.5kt Ebb (North Foreland Tide Station)

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	21-Aug-2015 Fri Julian Day: 233			CLIENT:	AK LNG
PROSPECT / SITE:				JOB DESCRIPTION:	Seafloor Mapping
NAV. SYSTEM:	Hypack			AREA & BLOCK:	Pipeline
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly
JOB DAY #:	Day: 43	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	484 680.30 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	606,000.00 90.8% Complete
		NAUTICAL MILE:	6080.0		74,300.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1254	1303	LT										
1303	1312	OL	PL08_099	032.0°	100	118	30.0	41.0	31.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 10kt NE. Vessel:2.9kt, Tide = 4.4m, 0.9kt Ebb (North Foreland Tide Station)
1312	1322	LT										
1322	1329	OL	PL08_103	212.0°	100	117	23.0	26.0	16.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 10kt NE. Vessel:5.9kt, Tide = 4.1m, 1.3kt Ebb (North Foreland Tide Station)
1329	1335	LT										
1335	1347	OL	PL08_098	032.0°	100	116	29.0	41.0	31.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 10kt NE. Vessel:2.9kt, Tide = 4.0m, 1.3kt Ebb (North Foreland Tide Station)
1347	1350	LT										
1350	1356	OL	PL08_094	212.0°	100	117	22.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 10kt NE. Vessel:5.9kt, Tide = 3.7m, 1.9kt Ebb (North Foreland Tide Station)
1356	1400	LT										
1400	1414	OL	PL08_097	032.0°	100	117	28.0	46.0	36.0			MBES/SBES/SSS/MAG Seas; 0.8m Winds: 10kt NE. Vessel:5.9kt, Tide = 3.6m, 2.1kt Ebb (North Foreland Tide Station)
1414	1425	OW										Recover survey equipment
1425	1525	IT										Transit to TM05
1525	1533	OW										Deploy mbes
1533	1535	OW	BoulderTest01D	034.0°	100	106	22.0	na	na			MBES only test line
1535	1538	OW										
1538	1540	OW	BOulderTest01E	214.0°	100	106		na	na			MBES only test line
1540	1550	OW										Recover MBES
1550	1650	IT										Transit to Cannery Dock
1650	1845	OW										Fuel Vessel
1845												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	21-Aug-2015 Fri Julian Day: 233			CLIENT:	AK LNG		
PROSPECT / SITE:				JOB DESCRIPTION:	Seafloor Mapping		
NAV. SYSTEM:	Hypack			AREA & BLOCK:	Pipeline		
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly		
JOB DAY #:	Day: 43	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	484	680.30 Kilometers	
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	606,000.00	90.8% Complete	
		NAUTICAL MILE:	6080.0			74,300.00 Meters Added	

TIME		OP	LINE INFORMATION								DNP	DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)			
		AM	PL08_100		117	121						
		AM	PL08_115	032.0°	117	121						Added milage for Run in/out
		AM	PL08_109	212.0°	117	121						Added milage for Run in/out
		AM	PL08_112	032.0°	116	120						Added milage for Run in/out
		AM	PL08_108	212.0°	117	121						Added milage for Run in/out
		AM	PL08_111	032.0°	117	121						Added milage for Run in/out
		AM	PL08_107	212.0°	117	121						Added milage for Run in/out
		AM	PL08_110	032.0°	117	121						Added milage for Run in/out
		AM	PL08_106	212.0°	117	121						Added milage for Run in/out
		AM	PL08_102	032.0°	117	121						Added milage for Run in/out
		OW	PL08_105	212.0°	117	121						Added milage for Run in/out
		AM	PL08_101	032.0°	118	122						Added milage for Run in/out
		AM	PL08_105A	212.0°	117	121						Added milage for Run in/out
		AM	PL08_104	032.0°	118	122						Added milage for Run in/out
		AM	PL08_099		118	122						Added milage for Run in/out
		AM	PL08_103		117	121						Added milage for Run in/out
		AM	PL08_098		116	120						Added milage for Run in/out
		AM	PL08_094		117	121						Added milage for Run in/out
		AM	PL08_097		117	121						Added milage for Run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	22-Aug-2015 Sat Julian Day: 234
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 44
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	1.0m	15kts	NW
Wx - 1800:	na	15kts	NW
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:		
Safety:	X	Review MAR-TRA-009, 1 HOC card for a safe act
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning ops meeting
0700	0715	OW										Pre-start checks
0715	0840	IT										Depart Cannery Dock for survey site
0840	0858	OW										Deploy MBES. Conduct usvp
0858	0901	OW	BoulderTest1F	214.0°	100	105		NA	NA			MBES only test line
0901	0904	OW	BoulderTest1G	034.0°	100	105		NA	NA			MBES only test line
0904	0906	OW	BoulderYaw1	214.0°	100	105		NA	NA			MBES only test line
0906	0909	OW	BoulderYaw2	034.0°	100	105		NA	NA			MBES only test line
0909	0912	OW	BoulderYaw3	214.0°	100	105		NA	NA			MBES only test line
0912	0920	OW										Recover MBES
0920	1030	IT										Transit to PL07
1030	1045	OW										Deploy survey equipment
1045	1051	LT										
1051	1110	OL	PL07_005	030.0°	100	154	25.0	25.0	15.0			MBES/SBES/SSS/MAG Seas; 0.6m Winds: 5kt NW. Vessel: 4.8 kt, Tide = 4.5m, 2.1kt Flood (North Forelard Tide Station)
1110	1115	OW										Conduct USVP
1115	1135	IT										Transit to PL08
1135	1150	OW										Recover survey equipment, seas and winds have increased to 1.0m 15kts are forecasted to further increase to 1.5m 20kts
1150	1225	IT										Slowed speed to Change air filter on Stbd Main Engine
1225	1250	IT										Stbd engine may have a faulty turbo
1250	1535	IT										Transiting to port on 1 engine
1535	1615	WS										Fueled Vessel
1615	1830	WS										Repairs to Stbd Main Engine
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	22-Aug-2015 Sat Julian Day: 234
PROSPECT / SITE:	D
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 44
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL07_005	030.0°	154	158						Added mileage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	23-Aug-2015 Sun Julian Day: 235
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 45
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT

EQUIP	#
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE

Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	na	10kts	NW
Wx - 1800:	na	10kts	NW
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-002
Pre/Post JOB:	NO	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0700	E103									
0700	1630	E103									
1630	1830	E103									
1830											

DETAILED SURVEY INFORMATION

Morning Ops meeting
Vessel maintance/repair. Stbd Main Engine exhaust expansion pipe segment being replaced
Exhaust expansion installed but a broken bolt remains.

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	24-Aug-2015 Mon Julian Day: 236
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 46
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	na	10kts	N
Wx - 1800:	na	10kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-002
Pre/Post JOB:	NO	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	E103										Morning ops meeting
0700	1300	E103										Maintanence/Repair of Stbd Main Engine Exhaust expansion joint
1300	1325	E103										Depart dock
1325	1350	E103										Vessel having speed issue, cannot get up to full speed
1350	1430	E103										Return to Dock
1430	1830	E103										Change out fuel filters, air filters
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	25-Aug-2015 Tue Julian Day: 237
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 47
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	0.6m	5-10kts	S
Wx - 1800:	0.8m	10kts	S
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MR-TRA-007. Conducted a loss of propulsion drill
Pre/Post JOB:		

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	0730	OW									
0730	0800	OW									
0800	0835	E103									
0835	0845	E103									
0845	0930	E103									
0930	1000	E103									
1000	1020	E103									
1020	1100	E103									
1100	1140	E103									
1140	1200	E103									
1200	1210	E103									
1210	1600	E103									
1600	1605	E103									
1605	1800	E103									
1800	1801	E103									
1801	1830	E103									
1830											

DETAILED SURVEY INFORMATION

Morning Ops meeting, WEEKLY Safety meeting
Depart Cannery Dock
Port engine shutdown, possible air lock in fuel line, Returning to dock
Port engine restarted Heading to river mouth to do a sea trial
Sea trial ongoing transiting back up the river
At dock
Loss of Propulsion Drill, Locate tow bridle, discuss anchor deployment, call RV Norman O by VHF and phone, Called RV My by phone
Mechanic assessing Engine problem, change fuel filers
Depart Cannery Dock for sea trails
Sea trials complete,mechanic has diagnosed that the intercoolers are dirty and need to be cleaned
Returning to dock, winds have increased to 10kts expect that sea conditions on survey site are 0.6m
At dock, Vessel Repairs/maintance Engine intercoolers removed to be cleaned at mechanic's garage
Wind readings from NOAA weather station indicate wind steady at 10kts form S, expected sea conditions at 0.6 to 0.8m, marginal survey conditions
Wind readings from NOAA weather station indicate wind steady at 10kts form S, expected sea conditions at 0.6 to 0.8m, marginal survey conditions
Vessel engine maintance

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	26-Aug-2015 Wed Julian Day: 238
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 48
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valikonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	2.0m	25kts	SW
Wx - 1200:	2.5m	35-40kts	SSW
Wx - 1800:	2.5m	30-35kts	SSW
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-007 with Westerly and My Maria crews
Pre/Post JOD:	NO	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0600	0631	WS										Winds 25kts SSW, Expected seas 2.0m, Small vessel advisory in effect
0631	0701	WS										Morning Ops
0701	0800	WS										Winds at 0800 were 25-30kts SSW, Expected seas 2.0m, Small vessel advisory in effect
0800	0930	WS										Stbd intercooler installed
0930	1000	WS										Winds at 1000 were 35-40kts from the SSW, Expected seas are over 2.0m
1000	1130	WS										Install port intercooler
1130	1135	WS										Departed dock for sea trial
1135	1200	WS										Winds 35ktsSSW gusting to 42kts, expected seas are above 2.5m
1200	1205	WS										Sea trial conducted, vessel came up on plane and to full speed 26kts. Mechanic and Captain satisfied with repairs to engines.
1205	1220	WS										At Cannery Dock
1220	1345	WS										Review MAR-TRA-007 with Westerly and My Maria crews. Westerly captain and My Marie Capt discussed communications, rigging of tow bridle
1345	1400	WS										Winds 35kts SSW gusting to 38kts, expected seas are above 2.5m
1400	1600	WS										
1600	1601	WS										Winds 35kts SSW gusting to 38kts, expected seas are above 2.5m
1601	1800	WS										
1800	1801	WS										Winds 30ts SSW gusting to 35kts, expected seas are above 2.5m
1801	1830	WS										
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	27-Aug-2015 Thu Julian Day: 239
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 49
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	John Valkonis
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	2.0m	20kts	SW
Wx - 1200:	2.0m	15-20kts	NW
Wx - 1800:	2.0m	30kts	NW
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	No	
Shift Change:	N/A	
Safety:	No	
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	0631	WS									
0631	0730	WS									
0730	0800	WS									
0800	0801	WS									
0801	1000	WS									
1000	1001	WS									
1001	1159	WS									
1159	1200	WS									
1200	1359	WS									
1359	1400	WS									
1400	1559	WS									
1559	1600	WS									
1600	1759	WS									
1759	1800	WS									
1800	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Winds 20kts from the SW,Small vessel Advisory in affect for Survey areas, Forecast has winds increasing to 30kts thru the day
Morning Ops Meeting

Winds 15-20kts NW, Sea Expected near 2.0m in survey areas

Winds 15-20kts NW, Seas Expected near 2.0m in survey areas

Winds 20kts WNW, Seas Expected near 2.0m in survey areas

Winds 20kts W, Seas Expected near 2.0m in survey areas

Winds 25kts W, Seas Expected near 2.0m in survey areas

Winds 30kts NW, Seas Expected near 2.0m in survey areas

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	28-Aug-2015 Fri Julian Day: 240
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 50
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	1.5m	15-20kts	NE
Wx - 1200:	1.5m	15kts	NE
Wx - 1800:	1.5m	15kts	NE
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power
Toolbox:	No
Shift Change:	N/A
Safety:	No
Pre/Post Job:	No

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	0700	WS									
0700	0759	WS									
0759	0800	WS									
0800	0959	WS									
0959	1000	WS									
1000	1159	WS									
1159	1200	WS									
1200	1359	WS									
1359	1400	WS									
1400	1559	WS									
1559	1600	WS									
1600	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Morning ops meeting
MV Q105 was observing seas up to 1.5m at there current location
Winds 15-20kts ENE, Seas expected to be 1.5m in survey area

Winds 15-20kts NE, Seas expected to be 1.5m in survey area

Winds 15-20kts NE, Seas expected to be 1.5m in survey area

Winds 15kts NE, Seas expected to be 1.5m in survey area

Winds 10kts S, Seas expected to be 1.0m in survey area

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	29-Aug-2015 Sat Julian Day: 241
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 51
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	na	na	na
Wx - 1800:	na	na	na
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power
Toolbox:	No
Shift Change:	N/A
Safety:	No
Pre/Post Job:	No

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Fatigue Mangement Day, No survey operations conducted

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	30-Aug-2015 Sun Julian Day: 242
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 52
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	na	na	na
Wx - 1800:	na	na	na
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power
Toolbox:	No
Shift Change:	N/A
Safety:	No
Pre/Post Job:	No

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Fatigue Mangement Day, No survey operations conducted

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	31-Aug-2015 Mon Julian Day: 243
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 53
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	1.2-1.5m	20kts	NE
Wx - 1200:	1.5m	20-25kts	N
Wx - 1800:	1.5m	15-20kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Abandon Ship Drill, Review MAR-TRA-007, 1 HOC for a suggestion
Pre/Post JOD:	NO	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0600	0730	WS										Morning Ops Meeting, Small Vessel Advisory issed for Survey Area Today
0730	0731	WS										Contacted MV Q105 who informed that Winds are 20kts and seas were 4-5' in East Forelands area
0731	0745	WS										Vessel Pre-start checks
0745	0815	WS										Depart Cannery dock to conduct POSMV GAMS calibration at Kenai river mouth
0815	0820	WS										Seas 1.0m just outside Kenai River Entrance, return to dock
0820	0825	WS										POSMV GAMS Calibration
0825	0900	WS										At Cannery Dock
0900	0915	WS										
0915	0930	WS										Abandon Ship Drill
0930	1000	WS										
1000	1001	WS										Winds 20kts N, Seas of 1.5m are expected in survey area, Small Vessel Advisory still in effect
1001	1045	WS										Tide at Kenai River 1.0m and falling, vessel unable to transit out at that level
1045	1159	WS										
1159	1200	WS										Winds 20-25kts N, Seas of 1.5m are expected in Survey Area
1200	1400	WS										Winds 20-25kts N, Seas of 1.5m are expected in Survey Area
1400	1445	WS										Tide Level at Kenai 1.0m and rising
1445	1559	WS										
1559	1600	WS										Winds 15-20kts N, Seas of 1.5m are expected in Survey Area
1600	1800	WS										Winds 15-20kts N, Seas of 1.5m are expected in Survey Area
1800	1830	WS										
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	01-Sep-2015 Tue Julian Day: 244
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 54
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	1.5m	20kts	N
Wx - 1200:	0.5m	10kts	N
Wx - 1800:	0.5m-1.0m	10-15kts	W
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief descriptior

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Weekly Safety Meeting, Review MAR-TRA's 012 and 013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meetting
0700	0730	OW										Weekly Safety meeting
0730	0735	WS										Called and spoke with PC on Q105, who informed that it is still waiting on weather. Seas 1.5m Winds 15kts, Will delay Westerly departure until condi
0735	0930	WS										
0930	0945	OW										On vessel,
0945	1050	IT										Depart Cannery Dock
1050	1100	OW										*Conditions at patchtest area are 0.5m 1.0m, will transit to PL07 and run infill line then return to patch test area* allowing for seas to subside
1100	1120	IT										Transit to PL07
1120	1130	IT										
1130	1220	IT										At infill line for PL07
1220	1240	OW										MBES Deployed,Conducted usvp
1240	1309	LT										Current very strong 5.5kts Ebb, noise from vessel working hard is overpowering MBES, will run line from North to South
1309	1312	IF	PL07_INFILL	225.0°	100	108	27.0	NA	NA			MBES Only infill line
1312	1320	OW										Recover MBES
1320	1345	IT										Transit to Boulder PT
1345	1400	OW										Deploy MBES and conduct Usvp
1400	1402	CAL	PT_YawA	047.0°			13.8	NA	NA			Patch Test line
1402	1403	LT										
1403	1404	CAL	PT_Yaw2A	227.0°			13.6	NA	NA			
1404	1406	LT										
1406	1408	CAL	PT_Yaw2C	047.0°			13.8	NA	NA			
1408	1410	LT										
1410	1411	CAL	PT_CenterA	227.0°			13.0	NA	NA			
1411	1412	LT										
1412	1414	CAL	PT_CenterB	047.0°			13.1	NA	NA			
1414	1418	LT										
1418	1419	CAL	PT_CenterC	227.0°			13.1	NA	NA			MBES Auto Gates and Vessel Sounder turned off on this line and lines after it
1419	1420	LT										
1420	1421	CAL	PT_CenterD	047.0°			13.3	NA	NA			
1421	1424	LT										
1424	1425	CAL	PT_Yaw1A	227.0°			13.2	NA	NA			
1425	1426	LT										
1426	1428	CAL	PT_Yaw2B	047.0°			12.2	NA	NA			

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	01-Sep-2015 Tue Julian Day: 244
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 54
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

680.50 Kilometers
91.2% Complete
74,500.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1428	1429	LT										
1429	1430	CAL	PT_Yaw2C	227.0°			12.8	NA	NA			
1430	1431	LT										
1431	1433	CAL	PT_Yaw2A0001	047.0°			13.9	NA	NA			
1433	1434	LT										
1434	1435	CAL	PT_Yaw2B0001	227.0°			13.3	NA	NA			
1435	1437	LT										
1437	1438	CAL	PT_Yaw2C0001	047.0°			13.8	NA	NA			
1438	1440	LT										
1440	1441	CAL	PT_CenterA0001	227.0°			13.5	NA	NA			
1441	1442	LT										
1442	1444	CAL	PT_CenterB0001	047.0°			13.2	NA	NA			
1444	1445	LT										
1445	1446	CAL	PT_Center2C0001	227.0°			13.8	NA	NA			Speed 6.2kts
1446	1455	OW										Recover MBES
1455	1600	IT										Transit to Dock
1600	1630	OW										Vessel Maintanence
1630	1830	OW										Refuel vessel
1830												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	02-Sep-2015 Wed Julian Day: 245
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 55
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

685.05 Kilometers
93.8% Complete
79,050.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	n/a

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Kent Simpson

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.3m	5kts	E
Wx - 1200:	0.3m	5kts	E
Wx - 1800:	0.5m	5kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-012
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops Meeting
0700	0730	OW										Pre-Start checks, Weather was cold this morning, Captain flashed up and check heating system at the dock
0730	0920	IT										Depart Cannery Dock
0920	0950	OW										Deployed Survey Equipment
0950	0952	LT										
0952	0959	OL	PL08_093	212.0°	100	116	25.0	34.0	24.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 4.0 kt, Tide = 7.4m, 1.7kt Flood (North Foreland Tide Station)
0959	1002	LT										
1002	1009	OL	PL08_096	032.0°	100	116	29.0	39.0	29.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 4.8 kt, Tide = 7.3m, 1.4kt Flood
1009	1013	LT										
1013	1019	OL	PL08_092	212.0°	100	117	25.0	30.0	20.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 4.3 kt, Tide = 7.2m, 0.9kt Flood
1019	1024	LT										
1024	1033	OL	PL08_095	032.0°	100	117	28.0	41.0	31.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 4.0 kt, Tide = 7.0m, 0.6kt Flood
1033	1037	LT										
1037	1042	OL	PL08_088	212.0°	100	116	23.0	31.0	21.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 5.3kt, Tide = 6.8m, 0.2kt Ebb
1042	1047	LT										
1047	1058	OL	PL08_091	032.0°	100	117	26.0	32.0	22.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 3.0kt, Tide = 6.8m, 0.6kt Ebb
1058	1102	LT										
1102	1108	OL	PL08_087	212.0°	100	115	23.0	24.0	14.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 5.0kt, Tide = 6.3m,1.2kt Ebb
1108	1114	LT										Reset Delorme
1114	1131	OL	PL08_090	032.0°	100	115	25.0	31.0	21.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 1.8kt, Tide = 6.0m,1.6kt Ebb
1131	1135	LT										
1135	1140	OL	PL08_086	212.0°	100	115	25.0	24.0	14.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 6.0kt, Tide = 5.5m,2.4kt Ebb
1140	1153	LT										
1153	1219	OL	PL08_089	032.0°	100	116	24.0	31.0	21.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 1.0kt, Tide = 4.9m,3.1kt Ebb
1219	1225	LT										
1225	1229	OL	PL08_082	212.0°	100	116	24.0	24.0	14.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 7.5kt, Tide = 3.9m,4.1kt Ebb
1229	1241	LT										
1241	1311	OL	PL08_085	032.0°	100	116	22.0	29.0	19.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 1.2kt, Tide = 3.4m,4.5kt Ebb
1311	1316	LT										
1316	1320	OL	PL08_081	212.0°	100	114	24.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 7.8kt, Tide = 2.3m,5.0kt Ebb
1320	1335	LT										
1335	1404	OL	PL08_084	032.0°	100	115	22.0	29.0	19.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 0.7kt, Tide = 1.7m,5.2kt Ebb (max Current)
1404	1408	LT										

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	02-Sep-2015 Wed Julian Day: 245
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 55
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

685.05 Kilometers
93.8% Complete
79,050.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1408	1412	OL	PL08_080	212.0°	100	115	22.0	21.0	11.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 7.2kt, Tide = 0.8m,5.0kt Ebb
1412	1421	LT										
1421	1426	OL	PL08_083	032.0°	100	116	22.0	32.0	22.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 2.2kt, Tide = 0.5m,4.7kt Ebb, CONDUCTED US\P
1426	1441	LT										
1441	1445	OL	PL08_076	212.0°	100	115	25.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 6.8kt, Tide = 0.2m,4.3kt Ebb
1445	1451	LT										
1451	1505	OL	PL08_079	032.0°	100	115	23.0	33.0	23.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 2.0kt, Tide = 0.0m,4.0kt Ebb
1505	1509	LT										
1509	1514	OL	PL08_075	212.0°	100	114	23.0	23.0	13.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 5.8kt, Tide = -0.2m,3.5kt Ebb
1514	1520	LT										
1520	1532	OL	PL08_078	032.0°	100	114	25.0	35.0	25.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 5.8kt, Tide = -0.3m,3.3kt Ebb
1532	1535	LT										
1535	1540	OL	PL08_074	212.0°	100	114	23.0	24.0	14.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 6.0kt, Tide = -0.4m,2.9kt Ebb
1540	1544	LT										
1544	1552	OL	PL08_077	032.0°	100	115	23.0	37.0	27.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 3.0kt, Tide = -0.4m,2.7kt Ebb
1552	1554	LT										
1554	1559	OL	PL08_073	212.0°	100	113	23.0	22.0	12.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E Vessel: 6.8kt, Tide = -0.4m,2.4kt Ebb
1559	1615	OW										Recover survey Equipment
1615	1805	IT										Transit to dock
1805	1830	OW										Secure vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	02-Sep-2015 Wed Julian Day: 245
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 55
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 685.05 Kilometers
	93.8% Complete
	79,050.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
		AM	PL08_093		116	120					
		AM	PL08_096		116	120					
		AM	PL08_092		117	121					
		AM	PL08_095		117	121					
		AM	PL08_088		116	120					
		AM	PL08_091		117	120					
		AM	PL08_087		115	119					
		AM	PL08_090		115	119					
		AM	PL08_086		115	119					
		AM	PL08_089		116	120					
		AM	PL08_082		116	120					
		AM	PL08_085		116	120					
		AM	PL08_081		114	118					
		AM	PL08_084		115	119					
		AM	PL08_080		115	119					
		AM	PL08_083		116	120					
		AM	PL08_076		115	119					
		AM	PL08_079		115	119					
		AM	PL08_075		114	118					
		AM	PL08_078		114	118					
		AM	PL08_074		114	118					
		AM	PL08_077		115	119					
		AM	PL08_073		113	117					

DETAILED SURVEY INFORMATION

Added milage for Run in/out
Added milage for Run in/out
Added milage for Run in/out

Alaska LNG

FUGRO

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SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	03-Sep-2015 Thu Julian Day: 246
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 56
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

688.05 Kilometers
95.2% Complete
82,050.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	na
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	na

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.7m	10kts	NE
Wx - 1800:	1.3m	15kts	NE
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	No	
Safety:	No	
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0710	OW										Morning Ops Meeting
0710	0725	OW										Vessel PreStart Checks
0725	0915	IT										Depart Cannery Dock
0915	0930	OW										MBES Deployed
0930	1000	E65										Switched to Secondary Winch as wet splice on primary winch cable failed
1000	1009	LT										
1009	1016	OL	PL08_069	212.0°	100	113	30.0	65.0	55.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E. Vessel: 4.0 kt, Tide = 6.9m, 2.5kt Flood (North Foreland Tide Station)
1016	1021	LT										
1021	1027	OL	PL08_072	032.0°	100	113	30.0	39.0	29.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E. Vessel: 4.5 kt, Tide = 6.9m, 2.2kt Flood
1027	1035	LT										
1035	1041	OL	PL08_068	212.0°	100	114	29.0	69.0	59.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E. Vessel: 4.2 kt, Tide = 6.9m, 1.7kt Flood
1041	1046	LT										
1046	1051	OL	PL08_071	032.0°	100	113	30.0	49.0	39.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E. Vessel: 5.0 kt, Tide = 6.8m, 1.4kt Flood
1051	1056	LT										
1056	1101	OL	PL08_067	212.0°	100	113	28.0	66.0	56.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E. Vessel: 5.2 kt, Tide = 6.7m, 1.0kt Flood
1101	1105	LT										
1105	1112	OL	PL08_070	032.0°	100	113	30.0	50.0	40.0			MBES/SBES/SSS/MAG Seas; 0.3m Winds: 5kt E. Vessel: 4.3 kt, Tide = 6.8m, 0.7kt Flood
1112	1118	LT										
1118	1122	OL	PL08_063	212.0°	100	112	28.0	64.0	54.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt E. Vessel: 6.0kt, Tide = 6.4m, 0.1kt Flood
1122	1128	LT										
1128	1136	OL	PL08_066	032.0°	100	113	29.0	56.0	46.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt E. Vessel: 3.9kt, Tide = 6.3m, 0.2kt Ebb
1136	1139	LT										
1139	1143	OL	PL08_062	212.0°	100	113	28.0	40.0	30.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 5kt E. Vessel: 5.4kt, Tide = 6.1m, 0.6kt Ebb
1143	1149	LT										
1149	1157	OL	PL08_065	032.0°	100	113	29.0	59.0	49.0			MBES/SBES/SSS/MAG Seas: 0.5m Winds: 5kt NE. Vessel: 3.3kt. Tide = 5.9m. 0.9kt Ebb
1157	1201	LT										
1201	1205	OL	PL08_061	212.0°	100	111	28.0	38.0	28.0			MBES/SBES/SSS/MAG Seas; 0.5m Winds: 10ktNE. Vessel: 5.8kt, Tide = 5.6m, 1.4kt Ebb
1205	1212	LT										
1212	1221	OL	PL08_064	032.0°	100	112	29.0	59.0	49.0			MBES/SBES/SSS/MAG Seas; 0.7m Winds: 10kt NE. Vessel: 3.0kt, Tide = 5.4m, 1.8kt Ebb
1221	1227	LT										
1227	1231	OL	PL08_057	212.0°	100	112	30.0	38.0	28.0			MBES/SBES/SSS/MAG Seas; 0.7m Winds: 10kt NE. Vessel: 5.6kt, Tide = 5.2m, 2.3kt Ebb
1231	1239	LT										
1239	1250	OL	PL08_060	032.0°	100	112	30.0	72.0	62.0			MBES/SBES/SSS/MAG Seas; 1.0m Winds: 10kt NE. Vessel: 2.3kt, Tide = 4.8m, 2.7kt Ebb

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	03-Sep-2015 Thu Julian Day: 246
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 56
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

688.05 Kilometers
95.2% Complete
82,050.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1250	1255	LT										
1255	1259	OL	PL08_056	212.0°	100	111	31.0	37.0	27.0			MBES/SBES/SSS/MAG Seas, 1.0-1.2m Winds, 10kt NE, Vessel 2.3kt, Tide = 4.4m, 3.2kt Ebb
1259	1317	OW										Recover survey equipment, Seas have increased to 1.0m -1.2m as forecasted, large swell
1317	1430	IT										Transit to dock
1430	1545	WS										Waiting on tide to enter river
1545	1610	IT										At Cannery Dock
1610	1730	WS										Reterminate Sidescan cable while waiting for MyMaria to finish her repairs and move from our fueling berth
1730	1830	WS										Unable to fuel as another vessel is at dock is undergoing repairs with welding operations. Will fuel in the morning as welding was not completed by
1830												
		AM	PL08_069	113.0°	113	117						Added milage for run in/out
		AM	PL08_072		113	117						Added milage for run in/out
		AM	PL08_068		114	118						Added milage for run in/out
		AM	PL08_071		113	117						Added milage for run in/out
		AM	PL08_067		113	117						Added milage for run in/out
		AM	PL08_070		113	117						Added milage for run in/out
		AM	PL08_063		112	116						Added milage for run in/out
		AM	PL08_066		113	117						Added milage for run in/out
		AM	PL08_062		113	117						Added milage for run in/out
		AM	PL08_065		113	117						Added milage for run in/out
		AM	PL08_061		111	115						Added milage for run in/out
		AM	PL08_064		112	116						Added milage for run in/out
		AM	PL08_057		112	116						Added milage for run in/out
		AM	PL08_060		112	116						Added milage for run in/out
		AM	PL08_056		111	115						Added milage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	04-Sep-2015 Fri Julian Day: 247		CLIENT:	AK LNG	
PROSPECT / SITE:	Cook Inlet		JOB DESCRIPTION:	Seafloor Mapping	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	Pipeline	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 57	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	484	688.65 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	606,000.00	88.6% Complete
		NAUTICAL MILE: 6080.0			82,650.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	n/a
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	n/a	n/a	n/a
Wx - 1200:	1.0m	10kts	NE
Wx - 1800:	0.3m	5kts	NE
Wx - 2400:	n/a	n/a	n/a

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	ReviewMAR-TRA-013, 1 HOC card submitted
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops Meeting, Vessel Prestart checks
0700	0800	OW										Refuel Vessel
0800	0805	OW										Called MV Q105 who reported good weather/sea conditions in Cook inlet south of the Forelands
0805	0820	OW										Vessel pre-start checks. Captain had to add oil to gearboxes
0820	1040	IT										Depart Cannery Dock
1040	1205	WS										At PL08, Waiting on weather, Seas are 1.0m, winds 10-15kts, whitecaps are present
1205	1235	OW										*Deploy survey equipment*
1235	1305	E65										Switch to Port SS winch as problem with Stbd winch cable(no communication to towfish)
1305	1315	LT										
1315	1322	OW	PL08_039	032.0°	100	113	39.0	57.0	47.0			MBES/SBES/SSS/MAG Seas;1.0m Winds: 10k tNE. Vessel: 3.0 kt, Tide = 4.9m,1.9kt Ebb (North Foreland Tide Station) Line aborted due to jetsom
1322	1334	LT										Extended line turn to move away from a debris field of trees, branches etc..
1334	1357	OL	PL08_040	212.0°	100	177	30.0	30.0	20.0			MBES/SBES/SSS/MAG Seas;1.0m Winds: 10kt NE. Vessel: 5.5 kt, Tide = 4.6m,2.4kt Ebb
1357	1403	LT										
1403	1522	OL	PL08_037	032.0°	100	175	32.0	54.0	44.0			MBES/SBES/SSS/MAG Seas;1.0m Winds: 10kt NE. Vessel: 2.3 kt, Tide = 4.0m,3.2kt Ebb
1522	1532	LT										
1532	1553	OL	PL08_041	212.0°	100	179	28.0	28.0	18.0			MBES/SBES/SSS/MAG Seas;0.5m Winds: 10kt NE. Vessel: 5.8 kt, Tide = 2.2m,4.0kt Ebb, vessel crabbing downline due to strong current pushing us
1553	1605	OW										Recover survey equipment
1605	1745	IT										Transit to Cannery Dock
1745	1830	OW										Reterminated port SS cable but a problem still lies in the slip rings. Will reuire some more troubleshooting and repairs.
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	04-Sep-2015 Fri Julian Day: 247			CLIENT:	AK LNG		
PROSPECT / SITE:	Cook Inlet			JOB DESCRIPTION:	Seafloor Mapping		
NAV. SYSTEM:	Hypack			AREA & BLOCK:	Pipeline		
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly		
JOB DAY #:	Day: 57	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	484	688.65 Kilometers	
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	606,000.00	88.6% Complete	
		NAUTICAL MILE:	6080.0			82,650.00 Meters Added	

TIME		OP	LINE INFORMATION								
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
		AM	PL08_040		177	181					
		AM	PL08_037		175	179					
		AM	PL08_041		179	183					
					001	1144					

DETAILED SURVEY INFORMATION

Added milage for run in/out
Added milage for run in/out
Added milage for run in/out
Deleted milage for extra shotpoints recorded by Hypack

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Sep-2015 Sat Julian Day: 248
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 58
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

712.00 Kilometers
88.9% Complete
106,000.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BOR602273
Diff. GPS System - Trimble AG130	BOR603512
MBES - R2Sonic	BOR602630
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	n/a
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.3m	light	Var.
Wx - 1800:	0.3m	light	Var.
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	ReviewMAR-TRA-009 and 013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning ops meeting
0700	0705	OW										MV Q105 reports good weather conditions in the inlet
0705	0720	OW										Pre-start checks
0720	0915	IT										Depart Cannery dock for Shorty Creek borehole locations
0915	1010	OW										Deploy Survey equipment, remove mag from SS for shallow water work at SC Borehole location
1010	1016	LT										
1016	1019	AM	BHL_096	205.0°	100	108	5.5	NA	5.0			ShortyCreeek borehole survey, MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.0 kt, Tide = 1.0m,1.0kt Ebb (North Foreland Tide Station)
1019	1022	LT										
1022	1024	AM	BHL_094	025.0°	100	110	5.6	NA	5.0			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.0 kt, Tide = 4.3m,(North Foreland Tide Station)
1024	1028	LT										
1028	1031	AM	BHL_091	205.0°	100	109	5.2	NA	5.0			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.0 kt, Tide = 4.5m,
1031	1034	LT										
1034	1036	AM	BHL_088	025.0°	100	107	5.4	NA	5.0			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.5 kt, Tide = 4.6m,
1036	1039	LT										
1039	1042	AM	BHL_085	205.0°	100	108	5.2	NA	5.0			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.3 kt, Tide = 4.7m,
1042	1045	LT										
1045	1046	AM	BHL_082	025.0°	100	108	5.4	NA	5.0			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.5 kt, Tide = 4.8m,
1046	1050	LT										Recover SS as topsides lost comms to fish
1050	1052	AM	BHL_079	205.0°	100	107	5.3	NA	5.0			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.5 kt, Tide = 4.9m,
1052	1100	LT										
1100	1103	AM	BHL_099	025.0°	100	108	5.3	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.7 kt, Tide = 5.0m,
1103	1104	LT										
1104	1107	AM	BHL_102	205.0°	100	108	5.4	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.8 kt, Tide = 5.0m,
1107	1109	LT										
1109	1111	AM	BHL_105	025.0°	100	108	5.2	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.7 kt, Tide = 5.1m,
1111	1112	LT										
1112	1115	AM	BHL_108	205.0°	109	117	4.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.8 kt, Tide = 5.1m,
1115	1117	LT										
1117	1119	AM	BHL_110	025.0°	100	108	5.0	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.5 kt, Tide = 5.2m,
1119	1121	LT										
1121	1123	AM	BHL_112	205.0°	100	108	4.5	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.2m,
1123	1127	LT										
1127	1129	AM	BHL_114	025.0°	100	108	4.9	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.5 kt, Tide = 5.3m,

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Sep-2015 Sat Julian Day: 248
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 58
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

712.00 Kilometers
88.9% Complete
106,000.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1129	1130	LT										
1130	1132	AM	BHL_116	205.0°	100	107	4.6	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.1 kt, Tide = 5.3m,
1132	1133	LT										
1133	1135	AM	BHL_118	025.0°	100	107	4.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.5 kt, Tide = 5.3m,
1135	1137	LT										
1137	1140	AM	BHL_120	205.0°	100	107	4.2	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.5 kt, Tide = 5.4m,
1140	1142	LT										
1142	1144	AM	BHL_122	025.0°	100	108	4.4	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.1 kt, Tide = 5.4m,
1144	1145	LT										
1145	1148	AM	BHL_170	205.0°	100	107	3.8	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.14kt, Tide = 5.5m,
1148	1149	LT										
1149	1151	AM	BHL_171	025.0°	100	108	4.1	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.14kt, Tide = 5.5m,
1151	1153	LT										
1153	1155	AM	BHL_172	205.0°	100	108	3.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.14kt, Tide = 5.5m,
1155	1156	LT										
1156	1158	AM	BHL_173	025.0°	100	107	3.9	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.9kt, Tide = 5.5m,
1158	1200	LT										
1200	1202	AM	BHL_174	205.0°	100	107	3.6	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.2kt, Tide = 5.5m,
1202	1204	LT										
1204	1205	AM	BHL_175	025.0°	100	107	3.6	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.2kt, Tide = 5.5m,
1205	1206	LT										
1206	1208	AM	BHL_176	205.0°	100	107	3.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.0kt, Tide = 5.5m,
1208	1209	LT										
1209	1211	AM	BHL_177	025.0°	100	106	3.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.2kt, Tide = 5.5m,
1211	1213	LT										
1213	1215	AM	BHL_178	205.0°	100	106	3.4	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.8kt, Tide = 5.5m,
1215	1216	LT										
1216	1218	AM	BHL_179	025.0°	100	105	3.5	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.5m,
1218	1219	LT										
1219	1220	AM	BHL_180	205.0°	100	106	3.2	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.6kt, Tide = 5.5m,
1220	1222	LT										
1222	1225	AM	BHL_181	025.0°	100	104	3.5	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.9kt, Tide = 5.5m,
1225	1226	LT										
1226	1227	AM	BHL_182	205.0°	100	105	3.3	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.5kt, Tide = 5.5m,
1227	1228	LT										
1228	1229	AM	BHL_183	025.0°	100	104	3.1	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.5kt, Tide = 5.5m,
1229	1230	LT										
1230	1231	AM	BHL_184	205.0°	100	105	3.0	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.6kt, Tide = 5.5m,
1231	1235	OW										Move to VP borehole locations
1235	1238	AM	BHL_038	208.0°	100	108	9.3	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.5m,
1238	1242	LT										
1242	1246	AM	BHL_068	028.0°	108	115	5.2	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.5m,
1246	1248	LT										
1248	1249	AM	BHL_075	208.0°	116	124	4.2	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.5m,
1249	1250	LT										
1250	1253	AM	BHL_077	028.0°	100	107	3.3	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.5m,

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Sep-2015 Sat Julian Day: 248
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 58
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 712.00 Kilometers
	88.9% Complete
	106,000.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1253	1255	LT										
1255	1257	AM	BHL_070	208.0°	100	108	3.9	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.5m,
1257	1258	LT										
1258	1301	AM	BHL_074	028.0°	109	117	4.0	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.5m,
1301	1302	LT										
1302	1304	AM	BHL_073	208.0°	100	108	4.4	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.0kt, Tide = 5.4m,
1304	1306	LT										
1306	1309	AM	BHL_072	028.0°	100	107	4.5	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.4m,
1309	1310	LT										
1310	1312	AM	BHL_071	208.0°	100	108	4.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.4kt, Tide = 5.4m,
1312	1314	LT										
1314	1317	AM	BHL_070	028.0°	100	108	4.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 4.8kt, Tide = 5.4m,
1317	1322	LT										
1322	1323	AM	BHL_069_001	208.0°	100	107	4.9	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.8kt, Tide = 5.3m,
1323	1324	LT										
1324	1327	AM	BHL_068	028.0°	100	107	5.0	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.2kt, Tide = 5.3m,
1327	1329	LT										
1329	1330	AM	BHL_067	208.0°	100	108	5.2	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.2kt, Tide = 5.3m,
1330	1332	LT										
1332	1336	AM	BHL_066	028.0°	100	107	5.3	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.2kt, Tide = 5.2m,
1336	1337	LT										
1337	1338	AM	BHL_065	208.0°	100	108	5.4	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.2kt, Tide = 5.2m,
1338	1340	LT										
1340	1343	AM	BHL_064	028.0°	100	107	5.6	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.2kt, Tide = 5.2m,
1343	1347	LT										
1347	1348	AM	BHL_045	208.0°	108	115	5.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.9kt, Tide = 5.1m,
1348	1350	LT										
1350	1354	AM	BHL_046	028.0°	100	108	6.0	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.0kt, Tide = 5.0m,
1354	1355	LT										
1355	1357	AM	BHL_046	208.0°	100	108	6.0	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 3.0kt, Tide = 5.0m,
1357	1358	LT										
1358	1402	AM	BHL_050	028.0°	109	117	6.4	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 2.8kt, Tide = 4.9m,
1402	1403	LT										
1403	1405	AM	BHL_052	208.0°	100	108	6.0	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 2.9kt, Tide = 4.9m,
1405	1406	LT										
1406	1410	AM	BHL_054	028.0°	100	107	6.5	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 2.8kt, Tide = 4.8m,
1410	1411	LT										
1411	1412	AM	BHL_056	208.0°	100	108	6.2	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.8kt, Tide = 4.8m,
1412	1414	LT										
1414	1418	AM	BHL_058	028.0°	100	108	6.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 2.7kt, Tide = 4.8m,
1418	1419	LT										
1419	1420	AM	BHL_060	208.0°	100	108	6.3	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.9kt, Tide = 4.7m,
1420	1422	LT										
1422	1426	AM	BHL_062	028.0°	100	107	6.7	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.9kt, Tide = 4.6m,
1426	1427	LT										
1427	1428	AM	BHL_063	208.0°	100	108	6.4	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.9kt, Tide = 4.6m,

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	05-Sep-2015 Sat Julian Day: 248
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 58
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 712.00 Kilometers
	88.9% Complete
	106,000.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1428	1430	LT										
1430	1434	AM	BHL_043	028.0°	100	107	8.0	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.9kt, Tide = 4.5m,
1434	1435	LT										
1435	1437	AM	BHL_041	208.0°	100	107	8.2	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 5.9kt, Tide = 4.5m,
1437	1438	LT										
1438	1442	AM	BHL_039	028.0°	100	106	8.3	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 2.5kt, Tide = 4.4m,
1442	1443	LT										
1443	1444	AM	BHL_036	208.0°	100	107	8.1	NA	NA			MBES/SBES/SSS Seas;0.3m Winds: 5k t Var. Vessel: 2.5kt, Tide = 4.4m,
1444	1505	OW										Recover Survey equipment
1505	1645	IT										Transit to Cannery dock
1645	1800	OW										Fuel Vessel
1800	1830	OW										Vessel maintance, reterminate SS cable
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	06-Sep-2015 Sun Julian Day: 249
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 59
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

724.25 Kilometers
89.1% Complete
118,250.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	n/a
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.3m	5kts	SW
Wx - 1800:	0.3m	5kts	SW
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review TRA-MAR-002
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0715	OW										Morning ops meeting
0715	0915	OW										Creating MBES tiff image for nav, crew members checkout of lodge for today
0915	0930	OW										Vessel prestart checks, Contacted MV Q105 captain who reported good conditions in Cook Inlet
0930	1106	IT										Depart Cannery Dock
1106	1127	OW										Deploy MBES, conduct usvp
1127	1132	AM	BHL_162	229.0°	100	113	5.7	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 4.0 kt, Tide = 4.9m,(East Foreland Tide Station)
1132	1133	LT										
1133	1136	AM	BHL_124	049.0°	100	126	4.2	NA	NA			
1136	1137	LT										
1137	1142	AM	BHL_125	229.0°	127	139	5.2	NA	NA			
1142	1145	LT										
1145	1149	AM	BHL_126	029.0°	140	152	4.6	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 4.7 kt, Tide = 5.1m,(East Foreland Tide Station)
1149	1150	LT										
1150	1155	AM	BHL_129	229.0°	153	165	5.6	NA	NA			
1155	1156	LT										
1156	1200	AM	BHL_130	049.0°	166	177	3.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 4.4 kt, Tide = 5.2m,(East Foreland Tide Station)
1200	1201	LT										
1201	1206	AM	BHL_131	229.0°	178	190	5.5	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 4.0 kt, Tide = 5.2m,(East Foreland Tide Station)
1206	1207	LT										
1207	1209	AM	BHL_132	049.0°	191	201	3.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 4.0 kt, Tide = 5.2m,(East Foreland Tide Station)
1209	1210	LT										
1210	1214	AM	BHL_133	229.0°	202	212	5.3	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 4.0 kt, Tide = 5.2m,(East Foreland Tide Station)
1214	1216	LT										
1216	1219	AM	BHL_135	049.0°	213	223	3.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 4.0 kt, Tide = 5.2m,(East Foreland Tide Station)
1219	1220	LT										
1220	1224	AM	BHL_136	229.0°	224	234	5.2	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 4.0 kt, Tide = 5.2m,(East Foreland Tide Station)
1224	1226	LT										
1226	1230	AM	BHL_137	049.0°	235	245	3.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.2m,(East Foreland Tide Station)
1230	1231	LT										
1231	1235	AM	BHL_138	229.0°	246	256	5.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.2m,(East Foreland Tide Station)
1235	1236	LT										
1236	1241	AM	BHL_139	049.0°	257	267	3.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.3m,(East Foreland Tide Station) Passed a Setnet bouy on vessel port
1241	1242	LT										

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	06-Sep-2015 Sun Julian Day: 249
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 59
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

724.25 Kilometers
89.1% Complete
118,250.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1242	1246	AM	BHL_140	229.0°	268	277	4.9	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.3m,(East Foreland Tide Station)
1246	1247	LT										
1247	1251	AM	BHL_141	049.0°	278	287	2.9	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.3m,(East Foreland Tide Station)
1251	1252	LT										
1252	1255	AM	BHL_143	229.0°	288	296	4.8	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.3m,(East Foreland Tide Station)
1255	1256	LT										
1256	1258	AM	BHL_160	341.0°	297	298	3.0	NA	NA			Running line perpendicular to lines to maximize coverage at slack current on east side of grid
1258	1259	LT										
1259	1301	AM	BHL_163	161.0°	299	301	5.2	NA	NA			
1301	1302	LT										
1302	1303	AM	BHL_164	341.0°	302	303	3.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.2m,(East Foreland Tide Station)
1303	1305	LT										
1305	1306	AM	BHL_165	161.0°	304	305	4.7	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 3.9 kt, Tide = 5.2m,(East Foreland Tide Station)
1306	1307	LT										
1307	1309	AM	BHL_166	341.0°	306	309	3.0	NA	NA			
1309	1310	LT										
1310	1317	AM	BHL_168	161.0°	310	319	4.6	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.5 kt, Tide = 5.2m,(East Foreland Tide Station)
1317	1318	LT										
1318	1323	AM	BHL_145	341.0°	320	329	4.4	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.5 kt, Tide = 5.2m,(East Foreland Tide Station)
1323	1324	LT										
1324	1331	AM	BHL_147	161.0°	330	338	4.9	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.5 kt, Tide = 5.1m,(East Foreland Tide Station)
1331	1332	LT										
1332	1336	AM	BHL_148	341.0°	339	347	4.4	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.5 kt, Tide = 5.1m,(East Foreland Tide Station)
1336	1337	LT										
1337	1344	AM	BHL_149	161.0°	348	357	3.9	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.5 kt, Tide = 5.1m,(East Foreland Tide Station)
1344	1400	OW										Recover MBES, conduct usvp
1400	1520	IT										Transit to Cannery Dock
1520	1830	MD										Demob USBL transducer and mobilize grab sampler on the stern of the vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	07-Sep-2015 Mon Julian Day: 250
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 60
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	n/a
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.3m	light	var
Wx - 1800:	na	light	W
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief descriptior

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-003 & 013, 1 HOC for a safe act
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0630	0745	WS									
0745	0840	WS									
0840	1010	IT									
1010	1028	CO									
1028	1041	CO									
1041	1053	CO									
1053	1110	CO									
1110	1132	CO									
1132	1143	CO									
1143	1155	CO									
1155	1210	CO									
1210	1225	OW									
1225	1234	LT									
1234	1240	AM	BHL_002	247.0°	358	365		NA	NA		
1240	1241	LT									
1241	1242	AM	BHL_001	067.0°	366	372		NA	NA		
1242	1243	LT									
1243	1246	AM	BHL_003	247.0°	372	380		NA	NA		
1246	1247	LT									
1247	1249	AM	BHL_004	067.0°	381	387	5.4	NA	NA		
1249	1250	LT									
1250	1254	AM	BHL_005	247.0°	388	395	4.8	NA	NA		
1254	1256	LT									
1256	1258	AM	BHL_006	067.0°	396	403	5.9	NA	NA		
1258	1259	LT									
1259	1302	AM	BHL_007	247.0°	404	410	4.4	NA	NA		
1302	1303	LT									
1303	1306	AM	BHL_008	067.0°	411	418	4.8	NA	NA		
1306	1307	LT									
1307	1311	AM	BHL_009	247.0°	419	426	4.0	NA	NA		
1311	1313	LT									
1313	1316	AM	BHL_010	067.0°	427	434	5.0	NA	NA		
1316	1317	LT									

DETAILED SURVEY INFORMATION

Waiting on tides at dock, could not depart earlier due to darkness
Review grab sampler procedure, operational test of grab sampler at the dock, test ok
Transit to Grab sample location on ite PL02, Called MV Q105 who reported favorable sea conditions in Cook Inlet
PL02 -01 Grab Sample, First attempt no good, 2nd attempt 2 rocks
PL02-02 Grab sample , First attempt was good, sand
PL02-03 Grab sample , First attempt was good, rocks
PL02-04 Grab sample , First attempt was good, a rock
PL01-04 Grab sample , First attempt was good, rocks
PL01-03 Grab sample , First attempt was good, a rock
PL01-02 Grab sample , First attempt was good,rocks
PL01-01 Grab Sample, First attempt was good, rocks
Deploy MBES, conduct USVP

MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.6 kt, Tide = 4.8m,(East Foreland Tide Station)

MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.6 kt, Tide = 4.8m,(East Foreland Tide Station)

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	07-Sep-2015 Mon Julian Day: 250
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 60
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1317	1319	AM	BHL_011	247.0°	435	442	3.4	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.6 kt, Tide = 5.2m,(East Foreland Tide Station)
1319	1320	LT										
1320	1323	AM	BHL_012	067.0°	443	450	4.9	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.6 kt, Tide = 5.2m,(East Foreland Tide Station)
1323	1324	LT										
1324	1327	AM	BHL_013	247.0°	451	458		NA	NA			
1327	1329	LT										
1329	1332	AM	BHL_014	067.0°	459	466	4.6	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.6 kt, Tide = 5.2m,(East Foreland Tide Station)
1332	1333	LT										
1333	1337	AM	BHL_015	247.0°	467	474	2.8	NA	NA			MBES/SBES Seas;0.3m Winds: 5k t Var. Vessel: 2.6 kt, Tide = 5.2m,(East Foreland Tide Station)
1337	1351	OW										Recover MBES and conduct usvp
1351	1433	CO										PL05-01 Grab Sample, First attempt was good, rocks
1433	1500	CO										PL05-02 Grab Sample, First attempt was no good, 2nd attempt rocks
1500	1510	OW										Secure grab sampler
1510	1645	IT										Transit to dock
1645	1830	OW										
1830												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	08-Sep-2015 Tue Julian Day: 251
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 61
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marla Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.3m	5kts	N
Wx - 1800:	0.3m	5-10kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Loss of steering Drill, Review MAR-TRA-003 and 013
Pre/Post JOB:	NO	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0645	OW										Morning Ops meeting
0645	0655	OW										Pre-start checks
0655	0905	IT										Depart Cannery dock
0905	0945	CO										PL06-03, first attempt was a misfire, 2nd attempt was good, rocks
0945	0955	CO										PL07-04, first attempt was good, rocks
0955	1010	CO										PL07-03, first attempt was good, rocks
1010	1020	CO										PL06-02, first attempt was good, rocks
1020	1030	CO										PL06-01, first attempt was good, rocks
1030	1045	CO										PL07-02, first attempt was good, rocks
1045	1100	OW										Loss of Steering Drill
1100	1110	CO										PL07-01, first attempt was good, rocks
1110	1120	CO										PL04-01, first attempt was good, rocks
1120	1150	CO										PL03-01, first attempt was good , rocks
1150	1320	IT										Transit to Cannery Dock
1320	1730	MD										Demob Grab sampler equipment, Mobilize USBL system and sidescan
1730	1830	OW										Refuel Vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	09-Sep-2015 Wed Julian Day: 252
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 62
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

GEOPHYSICAL EQUIPMENT

	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD

Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE

Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.3	5kts	ENE
Wx - 1800:	1.2m	15kts	N
Wx - 2400:	na	na	na

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	No	
Safety:	X	Review MAR-TRA-009
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0600	0700	OW										Morning Ops meeting, Spoke to MV Q105 who informed me that weather conditions were good in the inlet south of the Forelands
0700	0830	E66										Sidescan fish has an issue and Discover software unable to communicate with SS fish
0830	0915	E66										Troubleshooting the SS fish with Edgetech who believe the problem is internal, dead bios battery, cable loose, CPU not working
0915	0930	E66										Tested SS fish with a test cable bypassing the cable on the winch, deckhead and slip rings, same result was seen. Fish is alive but no comms establi
0930	1330	E66										Troubleshooting the SS
1330	1340	E66										Depart dock
1340	1359	E66										MBES survey of Kenai river nearr the Cannery Lodge
1359	1400	E66										Winds 10-15kts NNE, Expected seas in survey area 1.0m, Wind and seas coming from Northerly direction, his creates large swell in our survey area
1400	1459	WS										MBES survey of Kenai river nearr the Cannery Lodge
1459	1500	WS										Winds 10-15kts NNE, Expected seas in survey area 1.0m
1500	1530	WS										Troubleshooting SS towfish
1530	1559	WS										
1559	1600	WS										Winds 15kts NNE, Expected seas in survey area 1.2m
1600	1630	WS										Called Q105 who informed that she is at the dock at ASRC, reported that the external siesmic operators have departed their survey area which is clo
1630	1759	WS										
1759	1800	WS										Winds 15kts NE, Expected seas in survey are 1.2m.
1800	1830	WS										
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	10-Sep-2015 Thu Julian Day: 253
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 63
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	1.5m	15-20kts	E
Wx - 1200:	1.5m	20kts	S
Wx - 1800:	1.0m	10kts	S
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA -002
Pre/Post Job:	NO	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0000	0631	WS										Winds were 15-20kts thru night, Forecast calling for 20kts of wind throught the day with 1.0m seas.
0631	0730	WS										Weekly safety meeting at the Fugro operating office in Nikiski
0730	0759	WS										Brought detail survey map for Lidar to Nikiski Fire station for the Lidar work happening at the beach near Boulder Pt and Suneva Lake
0759	0800	WS										Winds 210.15kts SE, Expected seas of 1.5m in survey area
0800	0959	WS										Ships Husbandry, clean up of vessel workstations and spaces
0959	1000	WS										Winds 15kts SE, Expected seas of 1.5m in survey area
1000	1159	WS										Prepare not working sidescan fish in shipping crates for delivery to manufacturer for repair.
1159	1200	WS										Winds 20kts S, Expected seas of 1.5m in survey area
1200	1250	WS										Q105 reports 20-25kts of wind, she is moving close to ASRC to avoid winds
1250	1359	WS										Secure grab sample cradle onto mounting with nuts/bolts
1359	1400	WS										Winds 20kts S, Expected seas of 1.5m in survey area
1400	1559	WS										Vessel maintenace compppleted, changed oil in both main engins
1559	1600	WS										Winds 10kts S, Expected seas of 1.0m in survey area
1600	1759	WS										Demobed USBL system and mobilized grab sampler equipment.
1759	1830	WS										Winds 10-15kts SE, Expected seas of 1.0m in survey area
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	11-Sep-2015 Fri Julian Day: 254
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 64
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	5kts	E
Wx - 1200:	0.3m	10kts	N
Wx - 1800:	0.3m	10kts	S
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-003, 2 HOC cards
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops Meeting
0700	0715	OW										Pre-start checks
0715	0920	IT										Depart Cannery Dock for survey area
0920	0945	CO										PL02-7A, Good sample, full sample, sample
0945	0955	CO										PL02-6A, Good sample,1/8 sample, 2 rocks
0955	1008	CO										PL02-5A, Good sample, 1/8 sample, sand
1008	1025	CO										PL02-8A, Good Sample, full sample, sand
1025	1037	CO										PL02-9A, Good Sample, 1/4 sample, rocks
1037	1050	CO										PL02-10A,Good Sample, 1/8 sample, 3 rocks
1050	1105	CO										PL02-11A,Good Sample, 1/4 sample,rocks
1105	1115	OW										Stop to assess possible thunderstorm, the dark clouds are moing north up the inlet, no cooncern yet, no adverse weather statement in a effect
1115	1125	CO										PL04-02A, Good Sample, rock, 1/8 sample
1125	1145	CO										PL04-03A, Good Sample,mud, 1/4 sample
1145	1200	CO										PL04-04A, Good sample, rocks, full sample
1200	1225	CO										PL06-04A, Good sample, rocks, 1/2 sample
1225	1230	OW										PL07-08A, No sample
1230	1245	CO										PL07-08B, Good sample,rock, 1/2 sample
1245	1255	CO										PL07-07A, Good Sample, rocks, 1/2 sample
1255	1300	OW										PL07-06A, No Sample
1300	1305	CO										PL07-06B, No Sample
1305	1318	CO										PL07-5A, Good sample, rocks, 1/4 sample
1318	1330	CO										PL05-5A, Good Sample, rocks, 1/8 sample
1330	1338	OW										PL05-4A, No sample
1338	1348	CO										PL05-4B, Good sample, rocks, 1/8 sample
1348	1355	CO										PL05-3A, Good sample, rocks, 1/8 sample
1355	1408	CO										PL03-5A, Good sample, rock, 1/8 sample
1408	1420	CO										PL03-4A, Good Sample, rocks, 1/2 sample
1420	1430	CO										PL03-3A, Good Sample, rocks, 1/2 sample
1430	1439	CO										PL03-2A, Good sample, rock, 1/8 sample
1439	1500	CO										PL01-5A, Good sample, rocks, 1/8 sample
1500	1625	IT										Transit to Dock
1625	1710	OW										Offload grab samples to CPC office
1710	1830	OW										Fueled vessel

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	11-Sep-2015 Fri Julian Day: 254
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 64
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484 729.40 Kilometers
	89.2% Complete
	123,400.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	12-Sep-2015 Sat Julian Day: 255
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 65
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	na	na	na
Wx - 1800:	na	na	na
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	No	
Shift Change:	No	
Safety:	No	
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Fatigue mangement day, no survey operations conducted

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	13-Sep-2015 Sun Julian Day: 256
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 66
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	na	na	na
Wx - 1800:	na	na	na
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	No	
Shift Change:	N/A	
Safety:	No	
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	1830	OW									
1830											

DETAILED SURVEY INFORMATION

Fatigue mangement day

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	14-Sep-2015 Mon Julian Day: 257
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 67
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

729.40 Kilometers
89.2% Complete
123,400.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	3.0m	25-30kts	SSW
Wx - 1200:	1.5m	10-15kts	SSE
Wx - 1800:	1.0m	10kts	S
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-003
Pre/Post Job:	NO	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0631	WS										*Weather, Winds 25-30kts, Expected Seas 3.0m, Smal Craft Advisory in effect for Survey Area*
0631	0700	WS										Morning Ops Meeting
0700	0800	WS										Winds 20-25kts SW, Expected seas 2.0-3.0m
0800	0810	WS										MV Q105 informs that they are down on weather and recording winds of 15-20kts
0810	0959	WS										
0959	1000	WS										Winds 10-15kts SSE, Expected seas are 1.5m
1000	1045	WS										Low tide in vessel will not be able sail out of River until it reaches 4' and sea conditions improve
1045	1159	WS										Sidescan fish #1 being transported by vehicle from Anchorage,
1159	1200	WS										Winds 10-15kts SSE, Expected seas are 1.5m
1200	1330	WS										Sidescan fish #2 has arrived at Fugro Operating center in Nikiski
1330	1500	WS										Demoblize grab sampler and mobilize USBL System
1500	1700	WS										Retrieved SS fish #2 from Nikiski, tested it on vessel including a rub test, test OK
1700	1730	WS										SS fish #1 arrive at Cannery lodge
1730	1900	WS										Test SS fish #1 on vessel including a rub test. Test OK except for a configuration issue in which mag data is not being transferred to Mag software
1900	1930	WS										*Install SS fish #2 on vessel, Sidescan system ready for deployment*
1930												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	15-Sep-2015 Tue Julian Day: 258
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 68
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

731.25 Kilometers
90.1% Complete
125,250.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.6m	5kts	E
Wx - 1200:	0.6m	10kts	N
Wx - 1800:	0.6m	10kts	NE
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	MOB Drill, Review MAR-TRA-012 and 013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0715	OW										Morning ops meeting, Weekly safety meeting
0715	0730	OW										Pre start checks, vessel took on some water
0730	0820	IT										Depart Cannery Dock
0820	0840	OW										Wettest FGSI SS FISH, test ok
0840	1045	IT										Transit to PL08, Vessel speed slow due to currerts and because vessel heavy with fuel, jet impellors may be worn down due to silt in water
1045	1050	OW										POS MV Gams calibration
1050	1100	OW										*2nd SS fish now has mag working after updating password in fish software*
1100	1115	OW										Deployed USBL and MBES, vessel drifted away from site in strong current, moving closer before deploying SS/Mag
1115	1125	OW										Conduct usvp
1125	1145	OW										SS/Mag fish deployed
1145	1216	LT										
1216	1244	OL	PL08_059A	032.0°	100	112	28.0	41.0	31.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 10kt N. Vessel: 0.7kt, Tide = 2.1m, 4.4kt Ebb (North Foreland Tide Station)
1244	1257	LT										
1257	1301	OL	PL08_055	212.0°	100	113	28.0	27.0	17.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 10kt N. Vessel: 7.3kt, Tide = 1.2m, 4.1kt Ebb, Vessel crabbing downline 30deg
1301	1314	LT										
1314	1328	OL	PL08_058	032.0°	100	112	28.0	46.0	36.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 5kt NE. Vessel: 1.2kt, Tide = 1.2m, 3.9kt Ebb,
1328	1336	LT										
1336	1340	OL	PL08_051	214.0°	100	117	28.0	28.0	18.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 5kt NE. Vessel: 6.5kt, Tide = 0.6m, 3.5kt Ebb, Vessel crabbing downline 15deg
1340	1353	LT										
1353	1404	OL	PL08_054	034.0°	100	114	30.0	47.0	37.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 5kt NE. Vessel: 2.1kt, Tide = 0.4m, 3.3kt Ebb, Conducted usvp
1404	1408	LT										
1408	1414	OL	PL08_050	214.0°	100	117	27.0	27.0	17.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 5kt NE. Vessel: 5.8kt, Tide = 0.3m, 3.0kt Ebb, Vessel crabbing downline 15deg
1414	1422	LT										
1422	1430	OL	PL08_053	034.0°	100	113	29.0	49.0	39.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 5kt NE. Vessel: 3.0kt, Tide = 0.3m, 2.7kt Ebb,
1430	1434	LT										
1434	1440	OL	PL08_049	214.0°	100	118	27.0	27.0	17.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 5kt NE. Vessel: 6.0kt, Tide = 0.3m, 2.4kt Ebb,
1440	1446	LT										
1446	1454	OL	PL08_052	034.0°	100	116	29.0	44.0	34.0			MBES/SBES/SS/Mag Seas;0.6m Winds: 5kt NE. Vessel: 6.0kt, Tide = 0.4m, 2.1kt Ebb,
1454	1510	OW										Recover survey equipment
1510	1515	OW										Man Over Board drill, Excellent drill, man recovered in 1min30sec
1515	1715	OW										Transit to dock
1715	1830	OW										Refuel Vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	15-Sep-2015 Tue Julian Day: 258
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 68
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

731.25 Kilometers
90.1% Complete
125,250.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL08_059A		112	116						Added milage for run in/out
		AM	PL08_055		113	117						Added milage for run in/out
		AM	PL08_058		112	116						Added milage for run in/out
		AM	PL08_051		117	121						Added milage for run in/out
		AM	PL08_054		114	118						Added milage for run in/out
		AM	PL08_050		117	121						Added milage for run in/out
		AM	PL08_053		113	117						Added milage for run in/out
		AM	PL08_049		118	123						Added milage for run in/out
		AM	PL08_052		116	120						Added milage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	16-Sep-2015 Wed Julian Day: 259
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 69
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

737.75 Kilometers
92.8% Complete
131,750.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	[illegible]
Diff. GPS System - Trimble AG130	[illegible]
MBES - R2Sonic	[illegible]
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.6m	5kts	NE
Wx - 1200:	0.3m	5-10kts	NNW
Wx - 1800:	0.3m	5kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Reiew MAR-TRA-013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning ops meeting
0700	0730	OW										Vessel pre start checks
0730	1005	OW										Depart Cannery Dock
1005	1023	OW										Deploy survey equipment
1023	1025	LT										
1025	1034	OL	PL08_045	214.0°	100	128	30.0	38.0	28.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 5.8kt, Tide = 5.7m, 1.1kt Ebb (North Foreland TideStation)
1034	1042	LT										
1042	1055	OL	PL08_048	034.0°	100	121	27.0	44.0	34.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 3.0kt, Tide = 5.3m, 1.6kt Ebb, Conducted USVP
1055	1057	LT										
1057	1106	OL	PL08_044	214.0°	100	131	34.0	24.0	29.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 5.9kt, Tide = 5.0m, 2.1kt Ebb
1106	1115	LT										
1115	1131	OL	PL08_047	034.0°	100	122	24.0	50.0	40.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 2.5kt, Tide = 4.6m, 2.6kt Ebb
1131	1136	LT										
1136	1146	OL	PL08_043	214.0°	100	140	29.0	36.0	26.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 5.7kt, Tide = 4.1m, 3.2kt Ebb
1146	1210	LT										
1210	1239	OL	PL08_046	034.0°	100	123	24.0	35.0	25.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 1.1kt, Tide = 3.2m, 3.9kt Ebb, Mag hit on charted wellhead
1239	1244	LT										
1244	1300	OL	PL08_042	214.0°	100	162	28.0	29.0	19.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 7.1kt, Tide = 2.4m, 4.3kt Ebb, Vessel crabbing downline 20deg
1300	1312	LT										
1312	1421	OL	PL0_039	034.0°	100	177	30.0	57.0	46.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 1.8kt, Tide = 1.8m, 4.3kt Ebb, Conducted USVP
1421	1424	LT										
1424	1444	OL	PL08_038	214.0°	100	175	28.0	29.0	19.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 1.8kt, Tide = 0.7m, 2.9kt Ebb
1444	1650	IT										Transit to Cannery Dock
1650	1720	OW										
1720	1830	OW										Fuel Vessel
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	16-Sep-2015 Wed Julian Day: 259
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 69
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

737.75 Kilometers
92.8% Complete
131,750.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
		AM	PL08_045		128	132						Added milage for run in/out
		AM	PL08_048		121	125						Added milage for run in/out
		AM	PL08_044		131	135						Added milage for run in/out
		AM	PL08_047		122	126						Added milage for run in/out
		AM	PL08_043		140	144						Added milage for run in/out
		AM	PL08_046		123	127						Added milage for run in/out
		AM	PL08_042		162	064						Added milage for run in/out
		AM	PL08_039		177	181						Added milage for run in/out
		AM	PL08_038		175	179						Added milage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	17-Sep-2015 Thu Julian Day: 260
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 70
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

737.75 Kilometers
92.8% Complete
131,750.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	na

PERSONNEL ONSHORE	
Offshore Site Manager:	Maria Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	Kent Simpson

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.5m	5kts	NE
Wx - 1200:	1.5m	10-15kts	NE
Wx - 1800:	1.5m	15-20kts	W
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-012
Pre/Post JOB:	NO	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0730	OW										Prestart checks
0730	0900	IT										Depart Cannery Dock
0900	0901	WS										Seas are 1.2m to 1.5m, Vessel slowed to 8kts,would take 2.5hrs to get to site, Given that forecast calling for 1.0m seas all day, Vessel returning to por
0901	1030	WS										Transit to Cannery Dock, Unable to survey in TM34 due tanker being alongside pier resulting a 1000' exclusion zone into the survey area
1030	1200	WS										Reterminate high strength rope line from Usvp winch to Usvp probe attachment device
1200	1201	WS										Winds 10-15kts NE, Expected seas at survey site 1.5m
1201	1300	WS										
1300	1301	WS										Tide level below level for traniting out Kenai River
1301	1359	WS										Acquired general supplies for vessel, bottled water, toliet paper, misc, etc..
1359	1400	WS										Winds 10-15kts NE, Expected seas at survey site 1.5m
1400	1459	WS										
1459	1500	WS										Tide level high enough to allow travel out of the river
1500	1600	WS										
1600	1601	WS										Winds 10-15kts NNE, Expected seas at survey site 1.5m
1601	1759	WS										
1759	1800	WS										Winds 15-20kts W, Expected seas at survey site 1.5m
1800	1830	WS										
1830												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	18-Sep-2015 Fri Julian Day: 261		CLIENT:	AK LNG	
PROSPECT / SITE:	Cook Inlet		JOB DESCRIPTION:	Seafloor Mapping	
NAV. SYSTEM:	Hypack		AREA & BLOCK:	Pipeline	
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY: 1	R/V:	Westerly	
JOB DAY #:	Day: 71	NAV. FIX DISTANCE: 50	No. of SURVEY LINES:	484	740.35 Kilometers
CRP TO STERN:	0.00 N/A	SURVEY UNITS: Meters	ORIGINAL JOB TOTAL:	606,000.00	96.8% Complete
		NAUTICAL MILE: 6080.0			134,350.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.5m	10kts	N
Wx - 1200:	0.5m	10kts	N
Wx - 1800:	0.3m	5kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-009 & 013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0715	OW										Pre-Start checks
0715	0915	IT										Depart Cannery Dock
0915	0935	OW										Deploy Survey Equipment
0935	0940	LT										
0940	1008	OL	PL08_036	034.0°	100	176	35.0	35.0	25.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 4.7kt, Tide = 6.0m, 1.7kt Flood (North Foreland Tide Station)
1008	1014	LT										
1014	1043	OL	PL08_035	214.0°	100	175	32.0	53.0	43.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 4.4kt, Tide = 5.9m, 1.1kt Flood , Conducted USVP
1043	1046	LT										
1046	1056	OL	PL08_034	034.0°	100	123	34.0	47.0	37.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 4.9kt, Tide = 5.8m, 0.3kt Flood
1056	1101	LT										
1101	1122	OL	PL08_033	034.0°	100	149	32.0	50.0	40.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 4.3kt, Tide = 5.8m, 0.1kt Slackwater
1122	1126	LT										
1126	1137	OL	PL08_029	214.0°	100	143	31.0	46.0	36.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 6.4kt, Tide = 5.3m, 0.5kt Ebb, Large log floating past to the North near SOL
1137	1142	LT										
1142	1206	OL	PL08_032	034.0°	100	147	32.0	50.0	40.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 3.3kt, Tide = 5.1m, 0.9kt Ebb
1206	1210	LT										
1210	1221	OL	PL08_028	214.0°	100	142	30.0	45.0	35.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 6.6kt, Tide = 4.6m, 1.6kt Ebb
1221	1226	LT										
1226	1257	OL	PL08_031	034.0°	100	147	31.0	50.0	40.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 2.8kt, Tide = 4.3m, 2.1kt Ebb, Conducted USVP
1257	1300	LT										
1300	1310	OL	PL08_027	214.0°	100	140	31.0	36.0	26.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 7.0kt, Tide = 3.7m, 2.8kt Ebb
1310	1321	LT										
1321	1400	OL	PL08_030	034.0°	100	144	29.0	43.0	33.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5kt N. Vessel: 1.8kt, Tide = 3.3m, 3.2kt Ebb
1400	1405	LT										
1405	1414	OL	PL08_023	214.0°	100	132	31.0	32.0	22.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5t N. Vessel: 7.2kt, Tide = 2.5m, 3.7kt Ebb
1414	1421	LT										
1421	1453	OL	PL08_026	034.0°	100	138	25.0	38.0	28.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5t N. Vessel: 1.9kt, Tide = 2.3m, 3.7kt Ebb, Conducted USVP
1453	1457	LT										
1457	1507	OL	PL08_022	214.0°	100	133	30.0	33.0	23.0			MBES/SBES/SS/Mag Seas;0.3m Winds: 5t N. Vessel: 6.2kt, Tide = 1.8m, 3.3kt Ebb,
1507	1520	OW										Recover Survey Equipment
1520	1700	IT										Transit to Cannery Dock
1700	1730	OW										Secure vessel

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	18-Sep-2015 Fri Julian Day: 261			CLIENT:	AK LNG		
PROSPECT / SITE:				JOB DESCRIPTION:	Seafloor Mapping		
NAV. SYSTEM:	Hypack			AREA & BLOCK:	Pipeline		
FUGRO JOB #:	23.00007123	NAV. DIVIDE BY:	1	R/V:	Westerly		
JOB DAY #:	Day: 71	NAV. FIX DISTANCE:	50	No. of SURVEY LINES:	484	740.35 Kilometers	
CRP TO STERN:	0.00 N/A	SURVEY UNITS:	Meters	ORIGINAL JOB TOTAL:	606,000.00	96.8% Complete	
		NAUTICAL MILE:	6080.0			134,350.00 Meters Added	

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1730	1830	OW										Refueled vessel
1830												
		AM	PL08_036		176	180						Added milage for run in/out
		AM	PL08_035		175	179						Added milage for run in/out
		AM	PL08_034		123	127						Added milage for run in/out
		AM	PL08_033		149	153						Added milage for run in/out
		AM	PL08_029		143	147						Added milage for run in/out
		AM	PL08_032		147	151						Added milage for run in/out
		AM	PL08_028		142	146						Added milage for run in/out
		AM	PL08_031		147	151						Added milage for run in/out
		AM	PL08_027		140	144						Added milage for run in/out
		AM	PL08_030		144	148						Added milage for run in/out
		AM	PL08_023		132	136						Added milage for run in/out
		AM	PL08_026		138	142						Added milage for run in/out
		AM	PL08_022		133	137						Added milage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	19-Sep-2015 Sat Julian Day: 262
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 72
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

745.15 Kilometers
100.3% Complete
139,150.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Marta Krynytzky
Ass't Off. Site Manager:	Charlie Hall
Data Manager:	Chuck Chamberlain
Data Processor:	Cody Gibson
Data Processor:	Lance Woods
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.5m	10kts	N
Wx - 1200:	0.5m	5kts	N
Wx - 1800:	0.3m	5kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-012, 1 HOC for safe act
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0630	0700	OW										Morning Ops meeting
0700	0720	OW										Pre-start checks
0720	0940	IT										Depart Cannery Dock for PL08
0940	0955	OW										Deploy survey equipment
0955	1001	LT										
1001	1012	OL	PL08_025	034.0°	100	138	28.0	41.0	31.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 5.9kt, Tide = 5.4m, 1.9kt Flood (North Foreland Tide Station)
1012	1017	LT										
1017	1029	OL	PL08_021	214.0°	100	130	32.0	60.0	50.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 4.5kt, Tide = 5.5m, 1.6kt Flood, Conducted USVP
1029	1033	LT										
1033	1047	OL	PL08_024	034.0°	100	135	28.0	25.0	25.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 4.9kt, Tide = 5.5m, 1.3kt Flood,
1047	1052	LT										
1052	1059	OL	PL08_017	214.0°	100	122	28.0	52.0	42.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 5.4kt, Tide = 5.5m, 1.0kt Flood,
1059	1103	LT										
1103	1114	OL	PL08_020	034.0°	100	128	29.0	33.0	23.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 4.8kt, Tide = 5.5m, 0.8kt Flood,
1114	1118	LT										
1118	1124	OL	PL08_016	214.0°	100	121	27.0	53.0	43.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 6.4kt, Tide = 5.4m, 0.6kt Flood,
1124	1127	LT										
1127	1133	OL	PL08_013	034.0°	100	116	29.0	51.0	41.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 5.7kt, Tide = 5.3m, 0.4kt Flood,
1133	1137	LT										
1137	1147	OL	PL08_143	291.0°	100	138	33.0	53.0	43.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 6.4kt, Tide = 5.3m, 0.2kt Flood,Running tieline at close to slackwater
1147	1208	LT										
1208	1216	OL	PL08_019	214.0°	100	126	29.0	47.0	37.0			MBES/SBES/SS/Mag Seas;0.5m Winds:5kt N. Vessel: 6.2kt, Tide = 4.9m, 0.4kt Ebb,
1216	1221	LT										
1221	1230	OL	PL08_015	034.0°	100	120	27.0	48.0	38.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel: 4.0kt, Tide = 4.8m, 0.7kt Ebb, Conducted usvp
1230	1233	LT										
1233	1241	OL	PL08_018	214.0°	100	126	28.0	34.0	24.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel: 6.0kt, Tide = 4.6m, 0.9kt Ebb,
1241	1246	LT										
1246	1255	OL	PL08_014	034.0°	100	116	27.0	42.0	32.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel: 3.40kt, Tide = 4.5m, 1.2kt Ebb,
1255	1259	LT										
1259	1304	OL	PL08_010	214.0°	100	120	33.0	56.0	46.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel: 6.9kt, Tide = 4.3m, 1.5kt Ebb,
1304	1310	LT										
1310	1320	OL	PL08_012	034.0°	100	116	29.0	51.0	41.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel: 3.4kt, Tide = 4.1m, 1.8kt Ebb,
1320	1322	LT										

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	19-Sep-2015 Sat Julian Day: 262
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 72
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

745.15 Kilometers
100.3% Complete
139,150.00 Meters Added

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1322	1328	OL	PL08_009	214.0°	100	121	33.0	48.0	38.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel: 6.9kt, Tide = 4.0m, 2.0kt Ebb,
1328	1335	LT										
1335	1348	OL	PL08_011	034.0°	100	118	29.0	48.0	38.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:2.7kt, Tide = 3.7m, 2.3kt Ebb,
1348	1351	LT										
1351	1359	OL	PL08_007	214.0°	100	125	31.0	32.0	22.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:5.5kt, Tide = 3.5m, 2.6kt Ebb,
1359	1404	LT										
1404	1421	OL	PL08_008	034.0°	100	124	29.0	51.0	41.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:2.6kt, Tide = 3.4m, 2.8kt Ebb,
1421	1423	LT										
1423	1429	OL	PL08_006	214.0°	100	123	30.0	30.0	20.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:6.6kt, Tide = 3.1m, 3.0kt Ebb,
1429	1435	LT										
1435	1447	OL	PL08_004	034.0°	100	115	27.0	50.0	40.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:2.3kt, Tide = 2.9m, 3.2kt Ebb,
1447	1451	LT										
1451	1457	OL	PL08_005	214.0°	100	119	29.0	29.0	19.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:6.5kt, Tide = 2.7m, 3.3kt Ebb, Conducted USVP
1457	1503	LT										
1503	1509	OL	PL08_003	034.0°	100	113	29.0	45.0	35.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:2.8kt, Tide = 2.6m, 3.3kt Ebb,
1509	1512	LT										
1512	1514	OL	PL08_001	214.0°	100	106	28.0	34.0	24.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:6.3kt, Tide = 2.5m, 3.3kt Ebb,
1514	1517	LT										
1517	1523	OL	PL08_002	034.0°	100	108	27.0	42.0	32.0			MBES/SBES/SS/Mag Seas;0.3m Winds:5kt N. Vessel:2.9kt, Tide = 2.4m, 3.2kt Ebb,
1523	1540	OW										*Recover Survey Equipment*
1540	1725	IT										Transit to Cannery Dock
1725	1830	OW										Vessel deferred planned maintenance. Change water pump in Port ME
1830												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	19-Sep-2015 Sat Julian Day: 262
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 72
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

745.15 Kilometers
100.3% Complete
139,150.00 Meters Added

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
		AM	PL08_025		138	142					
		AM	PL08_021		130	134					
		AM	PL08_024		135	139					
		AM	PL08_017		122	126					
		AM	PL08_020		128	132					
		AM	PL08_016		121	125					
		AM	PL08_013		116	120					
		AM	PL08_143		138	142					
		AM	PL08_019		126	130					
		AM	PL08_015		120	124					
		AM	PL08_018		126	130					
		AM	PL08_014		116	120					
		AM	PL08_010		120	124					
		AM	PL08_012		116	120					
		AM	PL08_009		121	125					
		AM	PL08_011		118	122					
		AM	PL08_007		125	129					
		AM	PL08_008		124	128					
		AM	PL08_006		119	123					
		AM	PL08_004		115	119					
		AM	PL08_005		119	123					
		AM	PL08_003		113	117					
		AM	PL08_001		106	110					
		AM	PL08_002		108	112					

DETAILED SURVEY INFORMATION

Added milage for run in/out

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	20-Sep-2015 Sun Julian Day: 263
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 73
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

745.15 Kilometers
100.3% Complete
139,150.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	1.0m	10kts	N
Wx - 1800:	0.5-1.0m	10kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-013
Pre/Post JOD:	NO	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0600	0700	OW									
0700	0715	OW									
0715	0900	IT									
0900	1030	WS									
1030	1140	WS									
1140	1230	WS									
1230	1330	WS									
1330	1830	WS									
1830											

DETAILED SURVEY INFORMATION

Morning Ops meeting
Pre-Start checks
Transit
Seas near 1.0m, vessel turned around and heading back south
Vessel near TM34 area but high tide has peaked, transit to port
Vessel maintenance
Refuel vessel
Captain changed out air filters on main engines, cleaned spare filters, conducted visual inspection of engine exhaust systems, all OK

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	21-Sep-2015 Mon Julian Day: 264
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 74
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

745.15 Kilometers
100.3% Complete
139,150.00 Meters Added

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	
Diff. GPS System - Trimble AG130	
MBES - R2Sonic	
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.5m	10kts	N
Wx - 1200:	0.3m	10kts	N
Wx - 1800:	0.3m	5kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-RA-009, Medical Emergency Drill, 1 HOC
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0700	0745	OW										Morning Ops Meeting
0745	0800	OW										Prestart Checks
0800	1020	IT										Transit
1020	1037	OW										Deploy survey equipment
1037	1044	LT										
1044	1048	IF	PL08_INFILL01	032.0°	100	114	32.0	30.0	20.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 6.0kt, Tide = 4.9m, 1.7kt Flood (North Foreland Tide Station)
1048	1052	LT										
1052	1100	OW	PL08_058A	212.0°	100	117	29.0	59.0	49.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 3.1kt, Tide = 5.0m, 1.6kt Flood
1100	1104	LT										
1104	1108	OW	PL08_058A	032.0°	100	116	31.0	31.0	21.0			MBES/SBES/SS/Mag Seas;0.5m Winds: 10kt N. Vessel: 3.1kt, Tide = 5.0m, 1.4kt Flood
1108	1125	OW										Recover survey equipment, Conduct USVP
1125	1200	IT										Transit to TM34, switched to LNG DPR
1200												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	21-Sep-2015 Mon Julian Day: 264
PROSPECT / SITE:	Cook Inlet
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 74
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Seafloor Mapping
AREA & BLOCK:	Pipeline
R/V:	Westerly
No. of SURVEY LINES:	484

745.15 Kilometers
100.3% Complete
139,150.00 Meters Added

TIME		OP	LINE INFORMATION									
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	21-Sep-2015 Mon Julian Day: 264
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 48
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
98.9% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BOR602273
Diff. GPS System - Trimble AG130	BOR603512
MBES - R2Sonic	BOR602630
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.5m	10kts	N
Wx - 1800:	0.3m	5kts	N
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-RA-009, Medical Emergency Drill, 1 HOC
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1200	1242	IT										Transit to TM34
1242	1252	OW										Deploy MBES and conduct USVP
1252	1256	OL	TM34_016	159.0°	100	145	45.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 6.3kt, Tide = 4.6m, 1.6kt Flood (Nikiski Tide Station), Contacted Tanker 3 times and never got a respo
1256	1308	LT										
1308	1324	OL	TM34_017	339.0°	146	192		NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 4.5kt, Tide = 4.5m, 0.8kt Flood
1324	1325	LT										
1325	1330	OL	TM34_018	159.0°	100	140	35.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 6.1kt, Tide = 4.3m, 0.3kt Flood
1339	1340	LT										
1340	1344	OL	TM34_019	339.0°	150	162		NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 6.1kt, Tide = 4.2m, 1.1kt Ebb
1344	1345	LT										
1345	1348	OL	TM34_020	159.0°	163	175	8.3	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 6.1kt, Tide = 4.1m, 1.2kt Ebb
1348	1349	LT										
1349	1353	OL	TM34_021	359.0°	176	188	6.8	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 6.1kt, Tide = 4.1m, 1.3kt Ebb
1353	1355	LT										
1355	1358	OLC	TM34_016_01	159.0°	100	110	11.2	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 5.71kt, Tide = 4.1m, 1.5kt Ebb
1358	1359	LT										
1359	1415	OLC	TM34_021_001	359.0°	111	157		NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 5.71kt, Tide = 4.0m, 1.5kt Ebb
1415	1416	LT										
1416	1427	OLC	TM34_020_001	159.0°	100	140	32.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 4.8kt, Tide = 3.8m, 1.9kt Ebb
1427	1428	LT										
1428	1438	OLC	TM34_019_001	359.0°	100	129	9.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 4.8kt, Tide = 3.7m, 2.2kt Ebb
1438	1439	LT										
1439	1450	OLC	TM34_018_001	159.0°	100	137	26.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 4.8kt, Tide = 3.6m, 2.4kt Ebb
1450	1505	LT										
1505	1509	OLC	TM34_016_002	359.0°	138	144		NA	NA			MBES/SBES Seas:0.3m Winds: 5kt N.
1509	1510	LT										
1510	1519	OL	TM34_017	159.0°	145	171	8.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N.
1519	1520	LT										
1520	1531	OLC	TM34_018_002	359.0°	172	198	12.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N.
1531	1532	LT										
1532	1540	OL	TM34_019	159.0°	199	225	7.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N.
1540	1541	LT										
1541	1552	OLC	TM34_020-002	359.0°	226	252	10.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 3.9kt, Tide = 3.0m, 2.2kt Ebb

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	21-Sep-2015 Mon Julian Day: 264
PROSPECT / SITE:	TM05
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 48
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
98.9% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

TIME		OP	LINE INFORMATION									DETAILED SURVEY INFORMATION
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	
1552	1553	LT										
1553	1559	OLC	TM34_021_002	159.0°	254	279	5.8	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 3.9kt, Tide = 2.9m, 2.3kt Ebb
1559	1600	LT										
1600	1611	OL	TM34_022	359.0°	280	306	8.5	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 3.9kt, Tide = 2.8m, 2.3kt Ebb
1611	1612	LT										
1612	1619	OLC	TM34_022_001	159.0°	307	333	4.2	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 3.9kt, Tide = 2.7m, 2.4kt Ebb
1619	1620	LT										
1620	1629	OLC	TM34_22_002	359.0°	334	360	6.7	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 4.5kt, Tide = 2.7m, 2.4kt Ebb
1629	1630	LT										
1630	1637	OLC	TM34_016_003	159.0°	361	386	7.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 4.6kt, Tide = 2.6m, 2.4kt Ebb
1637	1638	LT										
1638	1646	OLC	TM34_015_001	359.0°	387	407	14.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 4.3kt, Tide = 2.6m, 2.4kt Ebb
1646	1647	LT										
1647	1650	OLC	TM34_014_001	159.0°	408	421	13.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5kt N. Vessel: 6.5kt, Tide = 2.5m, 2.4kt Ebb
1650	1750	IT										Transit to Cannery Dock
1750	1810	OW										Medical Emergency Drill at the Dock , review ERP and discuss
1810	1900	OW										
1900												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	22-Sep-2015 Tue Julian Day: 265
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 49
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
98.9% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag - SeaSpy	133804
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Maria Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.5m	10kts	NE
Wx - 1200:	1.0m	20kts	NNE
Wx - 1800:	1.0m	20kts	NNE
Wx - 2400:	na	na	na

ISE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Weekly SAFTEY Meeting, Review MAR-TRA-013
Pre/Post Job:	NO	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0700	0800	WS										Morning Ops meeting, weekly safety meeting, weather forecast has a small craft advisory in effect for Cook inlet and Survey Area
0800	0801	WS										Q105 reports Winds 15-20kts, seas 0.6m near TM34
0801	0900	WS										Q105 reports Winds 15-20kts, seas 0.6-1.0m near TM34
0900	1000	WS										Winds 15kts NNE, Expected Seas of 0.6m-1.0m IN survey area
1000	1001	WS										
1001	1150	WS										Review SS data with client rep in CPC
1150	1200	WS										Start MBES Survey Kenai River Channel with multibeam, 6 Simops Seismic vessels moored in Kenai River waiting on weather
1200	1201	WS										Winds 15-20kts NNE, Expected Seas of 0.6m-1.0m in survey area
1201	1230	WS										At Kenai River Mouth, Winds 15-20kts, whitecaps with choppy seas with 1.0m seas, Contacted Q105 but they are tranisting to Homer to crew change
1230	1240	WS										Stop survey of first KRM survey line
1240	1241	WS										Start 2nd MBES Survey Line of Kenai River Channel with multibeam
1241	1321	WS										End 2nd line
1321	1322	WS										Start KRM39 MBES line in river
1322	1327	WS										End KRM39
1327	1328	WS										Start KRM38
1328	1335	WS										End KRM38
1335	1341	WS										Start KRM35
1341	1342	WS										End KRM35
1342	1350	WS										Start KRM42
1350	1358	WS										End KRM42
1358	1400	WS										Start KRM34
1400	1401	WS										Winds 20kts NNE, Expected Seas of 1.0m in survey area
1401	1403	WS										KRM33
1403	1424	WS										KRM32
1424	1445	WS										At Cannery Dock
1445	1500	WS										
1500	1610	WS										Refuel vessel
1610	1759	WS										
1759	1800	WS										Winds 20kts NNE, Expected seas are 1.0m
1800	1900	WS										
1900												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	23-Sep-2015 Wed Julian Day: 266
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 50
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
98.9% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR802273
Diff. GPS System - Trimble AG130	BGR803512
MBES - RZSonic	BGR803639
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	0.6m	10-15kts	NE
Wx - 1200:	1.6m	15-20kts	NE
Wx - 1800:	1.0m	10-15kts	ENE
Wx - 2400:	na	na	na

HSE Reporting (Place an "x" in the box, with brief description)

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-009
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0700	0730	OW										Morning Ops Meeting
0730	0830	WS										Waiting on tide in Kenia River,
0830	0845	WS										
0845	0846	WS										Norman O reports fair conditions at ASCR location,
0846	0900	OW										Prestart checks
0900	0915	OW										Depart Cannery dock
0915	1030	OW										Transit to TM34
1030	1155	WS										Transit to Cannery Dock
1155	1200	WS										Vessel Planned Maintenace, Changout primary and secondary fuel filters on both main engines
1200	1201	WS										Seas 1.6m Winds 20kts NE
1201	1359	WS										
1359	1400	WS										Seas 1.5m Winds 15-20kts NE
1400	1759	WS										
1759	1800	WS										Winds 10-15kts ENE. Exepected seas of 1.0m
1800	1900	WS										
1900												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	24-Sep-2015 Thu Julian Day: 267
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 51
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
101.8% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.5m	10kts	N
Wx - 1800:	0.3m	5kts	N
Wx - 2400:	na	na	na

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-012
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0700	1000	WS										Waiting on tides in Kenai River
1000	1200	E103										Vessel port engine would not start due to cold causing fuel to gel and cause an airlock in fuel system
1200	1310	IT										Depart Cannery Dock
1310	1325	OW										Surevy Equipment deployed
1325	1330	LT										
1330	1336	OW	TM34_003A	039.0°	100	125	29.0	30.0	20.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel: 6.0kt, Tide = 5.0m, 2.8kt Flood (E.Foreland Tide Station).
1336	1342	LT										
1342	1348	OW	TM34_002A	219.0°	100	114	34.0	76.0	66.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel: 3.3kt, Tide = 5.2m, 2.8kt Flood
1348	1352	LT										
1352	1354	OW	TM34_001	039.0°	100	109	33.0	34.0	24.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel:6.1kt, Tide = 5.3m, 2.8kt Flood
1354	1413	LT										
1413	1429	OLC	TM34_018_003	219.0°	100	121	41.0	78.0	68.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel:1.5kt, Tide = 5.5m, 2.8kt Flood, Broke line early to avoid set net fishing bouys/line/clump we
1429	1436	LT										Conducted USVP at 1439
1436	1450	OLC	TM34_019_003	219.0°	122	148	38.0	76.0	66.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel:3.0kt, Tide = 5.8m, 2.8kt Flood, Broke line early to avoid set net fishing bouys/line/clump we
1450	1453	LT										
1453	1459	OLC	TM34_020_003	039.0°	100	100	127.0	18.0	8.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel:6.0kt, Tide = 5.8m, 2.8kt Flood,
1459	1501	LT										
1501	1506	OLC	TM34_021_003	219.0°	100	112	30.0	57.0	47.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel:3.0kt, Tide = 5.9m, 2.8kt Flood, Broke line early as it was to shallow for SS fish
1506	1511	LT										
1511	1515	OL	TM34_023	039.0°	100	110	22.0	38.0	28.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel:3.7kt, Tide = 5.9m, 2.4kt Flood, Broke line early to as it was to shallow for SS fish
1515	1519	LT										
1519	1521	OL	TM34_025	039.0°	100	107	17.0	22.0	12.0			MBES/SBES/SS/MAG Seas;0.3m Winds: 5-10kt N. Vessel:3.7kt, Tide = 5.9m, 2.2kt Flood, Broke line early to as it was to shallow for SS fish
1521	1531	OW										End SS/Mag operations due to shalow water and setnet fishing bouys/lin/clump weight
1531	1549	OLC	TM34_23_001	039.0°	100	149	20.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:3.7kt, Tide = 5.9m, 2.0kt Flood
1549	1550	LT										
1550	1555	OLC	TM34_016_004	219.0°	150	154	8.0	NA	NA			MBES/SBES Seas:0.3m Winds: 5-10kt N. Vessel:3.4kt, Tide = 5.8m, 1.6kt Flood
1555	1600	LT										
1600	1621	OLC	TM34_25_001	039.0°	100	150	12.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:3.4kt, Tide = 5.7m, 1.5kt Flood
1621	1622	LT										
1622	1630	OL	TM34_027	219.0°	151	177	4.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:3.4kt, Tide = 5.5m, 1.0kt Flood
1630	1632	LT										
1632	1634	IF	TM34_INFILL02	039.0°	100	106	14.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:3.4kt, Tide = 5.5m, 1.0kt Flood

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	24-Sep-2015 Thu Julian Day: 267
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 51
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215 607.25 Kilometers
	101.8% Complete
	23,150.00 Meters Added
	4,100.00 Meters Deleted

TIME		OP	LINE INFORMATION									
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
1636	1647	OLC	TM34_027_001	219.0°	100	115	4.6	NA	NA			MBES/SBES Seas:0.3m Winds: 5-10kt N. Vessel:5.6kt, Tide = 5.5m, 0.6kt Flood
1647	1649	LT										
1649	1700	OL	TM34_029	039.0°	100	116	3.5	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:5.4kt, Tide = 5.2m, 0.2kt Slack
1700	1706	LT										
1706	1717	OL	TM34_024	039.0°	100	157	6.5	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:5.5kt, Tide = 5.0m, 0.3kt Slack
1717	1718	LT										
1718	1725	OL	TM34_026	219.0°	158	185	4.5	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:5.4kt, Tide =4.8m, 0.7kt Ebb
1725	1726	LT										
1726	1734	OL	TM34_028	039.0°	186	208	3.3	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:5.4kt, Tide =4.8m, 0.7kt Ebb
1734	1737	LT										
1737	1738	OL	TM34_030	039.0°	209	215	9.0	NA	NA			MBES/SBES Seas;0.3m Winds: 5-10kt N. Vessel:5.4kt, Tide =4.5m, 1.4kt Ebb
1738	1845	IT										Transit to Dock
1845	1900	OW										Secure vessel
1900												

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	25-Sep-2015 Fri Julian Day: 268
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 52
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
101.8% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR802273
Diff. GPS System - Trimble AG130	BGR803512
MBES - RZSonic	BGR803633
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	n/a
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	2.0m	30kts	SSW
Wx - 1800:	2.0m	20kts	SSW
Wx - 2400:	na	na	na

HSE Reporting (Place an "x" in the box, with brief description)

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Review MAR-TRA-002
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1400	OW									
1400	1530	OW									
1530	1900	OW									
1900											

DETAILED SURVEY INFORMATION

Fatigue Mangement
Remove USBL pole and SS fish, install grab sampler on vessel during high tide
Fatigue Mangement

Alaska LNG

FUGRO

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	26-Sep-2015 Sat Julian Day: 269
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 53
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
101.8% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR602273
Diff. GPS System - Trimble AG130	BGR603512
MBES - R2Sonic	BGR603633
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	Seth Jones(CH2MHILL)
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	0.5m	10-15kts	NE
Wx - 1800:	1.0m	10-15kts	ENE
Wx - 2400:	na	na	na

HSE Reporting (Place an "x" in the box, with brief description

HSE OFFICER:	Kelly Power	
Toolbox:	X	JHA-Toolbox
Shift Change:	N/A	
Safety:	X	Seth Jones received a vessel orientation. Review MAR-TRA-003 and 013
Pre/Post Job:	No	

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP	DETAILED SURVEY INFORMATION
0700	0725	OW										*Morning Ops meeting*
0725	0735	OW										Prestart checks
0735	0840	IT										Depart Cannery Dock
0840	0910	CO										D1SS01-34-01A
0910	0915	OW										D1SS01-34-01B for CH2MHILL
0915	0925	OW										D2SS01-34-01A for CH2MHILL
0925	0930	CO										D2SS01-34-01B
0930	0940	OW										D3SS01-38-01A for CH2MHILL
0940	0959	CO										D3SS01-38-01B
0959	1055	OW										D5SS01-10-01A for CH2MHILL did give us rocks for our sample
1055	1056	E116										Grab sample rope snagged in block, completed JHA and recovered grab sample safely and with a sample
1056	1058	CO										D5SS01-34-01B
1058	1137	CO										D4SS01-06-01A
1137	1145	OW										D4SS01-06-01B, for CH2MHILL
1145	1205	CO										TM34-04A, Good sample 1 large rock
1205	1305	OW										Move TM02 location
1305	1315	CO										TM02-01A, Good sample
1315	1340	CO										TM02-03A. Good sample
1340	1355	CO										TM02_02A, Good sample
1355	1417	CO										TM01-02A, Good Sample
1417	1510	IT										Sea swell 1.0-1.3m, having a lot of difficulty controlling winch rope spooling on winch, plus grab sampler is swinging once out of the water
1510	1530	WS										
1530	1630	WS										Refuel Vessel
1630	1900	WS										1.0m Sea swell, not suitiable conditions for grab sampling
1900												

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	27-Sep-2015 Sun Julian Day: 270
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 54
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
101.8% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR802273
Diff. GPS System - Trimble AG130	BGR803512
MBES - RZSonic	BGR803639
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	Kelly Power
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	Seth Jones(CH2MHILL)
Client Representative:	Kent Simpson

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:	na	na	na
Wx - 1200:	na	na	na
Wx - 1800:	na	na	na
Wx - 2400:	na	na	na

HSE Reporting (Place an "x" in the box, with brief description)

HSE OFFICER:	Kelly Power	
Toolbox:	No	
Shift Change:	No	
Safety:	No	
Pre/Post Job:	No	

TIME		OP	LINE INFORMATION								
FROM	TO	CODE	LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	OW									
1900											

DETAILED SURVEY INFORMATION

Fatigue Mangement Day

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	28-Sep-2015 Mon Julian Day: 271
PROSPECT / SITE:	LNG Site
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 55
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
101.8% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR802273
Diff. GPS System - Trimble AG130	BGR803512
MBES - RZSonic	BGR803633
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	
Client Representative:	

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:			
Wx - 1200:			
Wx - 1800:			
Wx - 2400:			

HSE Reporting (Place an "x" in the box, with brief description)

HSE OFFICER:	Richie Charmichael	
Toolbox:	X	JHA
Shift Change:		
Safety:		
Pre/Post Job:		

TIME		OP CODE	LINE INFORMATION								DNP
FROM	TO		LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		
0700	1900	MD									
1900											

DETAILED SURVEY INFORMATION

Westerly Demobilization

Alaska LNG

FUGRO

SEAFLOOR MAPPING JOBLOG

ver 7.22.2015-A (Alaska)

DATE:	29-Sep-2015 Tue Julian Day: 272
PROSPECT / SITE:	LNGSite
NAV. SYSTEM:	Hypack
FUGRO JOB #:	23.00007123
JOB DAY #:	Day: 56
CRP TO STERN:	0.00 N/A

CLIENT:	AK LNG
JOB DESCRIPTION:	Hydrographic Survey
AREA & BLOCK:	LNG Sites
R/V:	Westerly
No. of SURVEY LINES:	215

607.25 Kilometers
101.8% Complete
23,150.00 Meters Added
4,100.00 Meters Deleted

GEOPHYSICAL EQUIPMENT	EQUIP #
Navigation System - POS MV	BGR802273
Diff. GPS System - Trimble AG130	BGR803512
MBES - RZSonic	BGR803639
SSS - Edgetech 4200	# 38719
Mag. - SeaSpy	13380A
USBL - IXSEA GAPS	# 151
Grab Sampler - Day Grab	
Grab Sampler - Van Veen	

PERSONNEL ONBOARD	
Captain:	Ryan Braget
Other Vessel Crew:	n/a
Party Chief:	
Hydro. Surveyor:	David Wise
Geophysical Tech.:	Richie Carmichael
Other Survey Crew:	
Client Representative:	

PERSONNEL ONSHORE	
Offshore Site Manager:	Jim Grant
Ass't Off. Site Manager:	Marta Krynytzky
Data Manager:	Lance Woods
Data Processor:	Cody Gibson
Data Processor:	Katie Conrad
Data Processor:	n/a
Additional Proc.:	n/a
Client Representative:	n/a

WEATHER REPORT

Time	Sea State	Wind Speed	Dir.
Wx - 0600:			
Wx - 1200:			
Wx - 1800:			
Wx - 2400:			

HSE Reporting (Place an "x" in the box, with brief description)

HSE OFFICER:	Richie Charmichael	
Toolbox:	X	JHA, demob TRA
Shift Change:		
Safety:		
Pre/Post Job:		

TIME FROM	TIME TO	OP CODE	LINE INFORMATION: LINE NUMBER	HEADING	BSP	ESP	Fath (m)	Mag (m)	SSS Fish (m)		DNP
0700	1900	MD									
1900											

DETAILED SURVEY INFORMATION

Westerly Demobilization

APPENDIX 2-C

BASE STATION OPUS SOLUTIONS/REPORTS

Base Station: Fat Alberts

Preliminary

NAD83(NSRS 2007) (EPOCH:2002.0000)

Latitude (N):	61° 08’ 57.47758”
Longitude (W):	151° 03’ 55.74864"
Ellipsoid Ht:	36.924m
Orthometric Ht:	32.131m
GEOID Model:	GEOID06

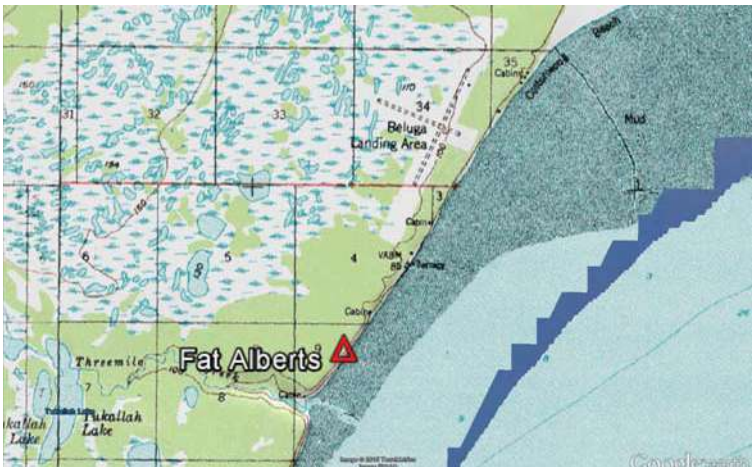
NAD83(NSRS 2007) Alaska Zone 4

Northing:	2613517.204 USft
Easting:	1452187.184 USft

NAD83(NSRS 2007) UTM zone 5

Northing:	6780957.067m
Easting:	604127.814m

The coordinates are relative to the Antenna Reference Point (ARP). The coordinates were computed with OPUS Projects software using 24 hours of GPS data (no GLONASS).



Google Earth Imagery–Beluga Area USGS Map

Close-up of Location

Base station from below

Looking South

Base Station: Integrity Roof

Preliminary

NAD83(NSRS 2007) (EPOCH:2002.0000)

Latitude (N):	60° 31’ 15.25649”
Longitude (W):	151° 15’ 28.51201"
Ellipsoid Ht:	22.911m
Orthometric Ht:	17.566m
GEOID Model:	GEOID06

NAD83(NSRS 2007) Alaska Zone 4

Northing:	2384449.90USft
Easting:	1413790.49USft

NAD83(NSRS 2007) UTM zone 5

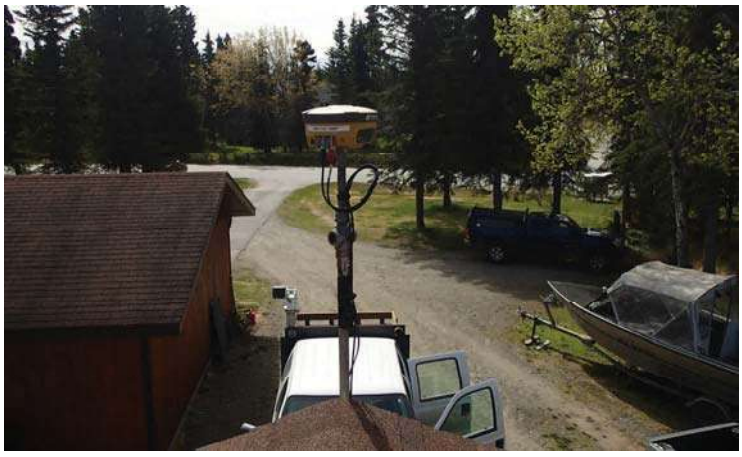
Northing:	6710691.187m
Easting:	595629.997m

The coordinates are relative to the Antenna Reference Point (ARP). The coordinates were computed with OPUS Projects software using 24 hours of GPS data (no GLONASS).

Google Earth Imagery –Kenai Overview

Face View—Close-up of Location

Base station from below



Looking South

APPENDIX 2-D

GRAB (BOTTOM) SAMPLE DESCRIPTIONS

BOTTOM SAMPLE LOG

Sample Number	Northing Easting (ft.)	Water Depth (ft.) at Time of Acquisition	Date Acquired (Local Date)	Rough Estimation of Sample Volume (gal)	Description
TM01_02A	2363646.507, 1365864.77	96.8	Sept. 26, 2015	0.25	Black (N1.75) to Greenish Gay (5G6/1) well rounded coarse gravel.
TM02_01A	2380876.214, 1380382.597	68.4	Sept. 26, 2015	0.5	Black to gray to olive gray (5Y4/1) to dark gray (N3) well rounded well graded fine to coarse gravel with coarse to fine sand and grey (G) clay
TM02_02A	2373845.37, 1372110.411	85.8	Sept. 26, 2015	0.25	Olive gray (5G6/1) to dark grey (N3) poorly sorted, coarse to fine gravel with one dark gray (N3) rounded cobble with a few sand granules.
TM02-03A	2374296.269, 1376115.145	83.5	Sept. 26, 2015	< 0.15	Rocks (2): 1. Gray (N5) to greenish grey (5G6/1) well rounded coarse gravel (2 x 1.5 x 1.5 in). 2. Gray (N5) well rounded coarse gravel (2.3 x 1.5 x 1 in).
TM03-01	2437702.698, 1388856.261	109.6	June 16, 2015	< 0.15	Dark greenish gray (5Y 3/2), well rounded aphanitic basalt (?) COBBLE, 12cm x 8cm x 7cm. with small (1cm) patches of encrusting calcareous bryozoan (?).
TM03-01B	2437917.537, 1388866.567	111.2	June 16, 2015	< 0.15	Grey (5Y 5/1), poorly sorted, very coarse to fine PEBBLES with a few granules.
TM03-02A	2417301.615, 1390922.795	74.5	June 16, 2015	0.3	Gray (5Y 5/1) to dark gray (5Y 4/1), very poorly sorted, very coarse to very fine pebble GRAVEL with very coarse to very fine SAND.
TM34_04A	2445915.346, 1388943.643	59.1	Sept. 26, 2015	0.25	One gray (N5) well rounded cobble (9 x 6 x 4.5 in).
D1SS01_01B	2434160.6, 1395130.315	n/a	June 16, 2015	n/a	CH2MHill Sample
D1SS01-34-01A	2436092.015, 1392160.195	46.6	Sept. 26, 2015	< 0.15	Grey (N5) clay with one light gray (N7) well rounded coarse sand granule (1 x 0.3 x 0.5 in), one black (N1.75) well rounded fine gravel granule (1.5 x 1.3 x 1.6 in), and one brown (10YR6/3) rounded (2.6 x 2.5 x 1.7 in) cobble.
D1SS01-34-01B	2436117.94, 1392297.45	42.0	Sept. 26, 2015	n/a	CH2MHill Sample

D2SS01_01B	2438612.766, 1392045.545	n/a	June 16, 2015	n/a	CH2MHill Sample
D2SS01-34-01A	2436309.859, 1392716.73	32.0	Sept. 26, 2015	n/a	CH2MHill Sample
D2SS01-34-01B	2436238.404, 1392637.677	35.7	Sept. 26, 2015	< 0.25	Black to gray to olive gray (5Y4/1) to greenish gray (5G6/1) to brown (10YR6/3) well rounded well graded fine to coarse gravel with trace of sand and clay with two cobbles. 1. Brown (10YR3/3) to white (W) well rounded (4 x 2.8 x 2.5 in) cobble. 2. Gray (N5) rounded (2.6 x 2 x 3 in) cobble.
D3SS01_01B	2438892.175, 1391932.337	n/a	June 16, 2015	n/a	CH2MHill Sample
D3SS01-38-01A	2435710.995, 1392581.096	33.8	Sept. 26, 2015	n/a	CH2MHill Sample
D3SS01-38-01B	2435731.863, 1392600.348	35.8	Sept. 26, 2015	< 0.25	Rocks (14): three olive gray (5Y4/1) well rounded to rounded coarse gravel, three olive gray (5Y4/1) to brown (10YR6/3) well rounded to angular coarse gravel, four dark grey (N3) well rounded to angular coarse to fine gravel, three brown (10Y6/3) to black (N1.75) well rounded fine gravel, and one olive gray (5Y4/1) angular cobble.
D4SS01_01A	2435990.398, 1392092.46	n/a	June 16, 2015	n/a	CH2MHill Sample
D4SS01-06-01A	2434159.598, 1395146.927	11.8	Sept. 26, 2015	0.25	Dark gray (N3) to olive gray (OY4/1) well rounded coarse gravels with trace of medium sand and two cobbles: 1. Dark gray (N3) well rounded cobble, 2. Dark gray angular cobble.
D4SS01-06-01B	2434187.986, 1395152.593	11.4	Sept. 26, 2015	n/a	CH2MHill Sample
D5SS01_01C	2435699.655, 1392539.438	n/a	June 16, 2015	n/a	CH2MHill Sample
D5SS01-10-01B (in line log as D5SS01-34-01B)	2438682.266, 1392070.928	28.7	Sept. 26, 2015	0.25	Olive gray (5Y4/4) to dark gray (N3) to greenish gray (5Y6/1) to dark brown (10YR3/3) to brown (10YR6/3) well rounded well graded coarse to fine gravel with two cobbles. 1. Dark bown (10YR3/3 to tan (10YR6/8) to red (5YR4/6) well rounded (3.5 x 3 x 3 in) cobble. 2. Olive gray (5Y4/1) well rounded (5 x 3.5 x 4 in) cobble.
D6SS01_01B	2436047.344, 1392668.37	n/a	June 16, 2015	n/a	CH2MHill Sample

**Coordinate Geodesy: NAD83AK4ft*

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 2275 Water Depth: 29.5m.

Northing: 6703693.36m, Easting: 581330.17m. (UTM, Zone 5N)

SAMPLE NUMBER: TM01_02A

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 2108 Water Depth: 20.84 m.

Northing: 6709139.49m, Easting: 585510.16m. (UTM, Zone 5N)

SAMPLE NUMBER: TM02_01A

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 2152 Water Depth: 26.16 m.

Northing: 6706884.5m, Easting: 583089.75m. (UTM, Zone 5N)

SAMPLE NUMBER: TM02_02A

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 2136 Water Depth: 25.46 m.

Northing: 6707077.34m, Easting: 584302.51m. (UTM, Zone 5N)

SAMPLE NUMBER: TM02-03A

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: **06/16/2015** Time (UTC): **17:08** Water Depth: **33.4m**

Northing: **6726555.06m**, Easting: **587299.96m**. (UTM, Zone 5N)

SAMPLE NUMBER: TM03-01

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: **06/16/2015** Time (UTC): **17:20** Water Depth: **33.9m**

Northing: **6726620.60m**, Easting: **587300.11m** (UTM, Zone 5N)

SAMPLE NUMBER: TM03-01b

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: **06/16/2015** Time (UTC): **19:46** Water Depth: **22.7m**

Northing: **6720373.72m**, Easting: **588212.61m**. (UTM, Zone 5N)

SAMPLE NUMBER: TM03-02

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 2002 Water Depth: 18m.

Northing: 6729056.19m, Easting: 587212.35m. (UTM, Zone 5N)

SAMPLE NUMBER: TM34_04A

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC):1651 Water Depth: 14.2m.

Northing: 6726110.71m, Easting: 588328.07m. (UTM, Zone 5N)

SAMPLE NUMBER: D1SS01-34-01A

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 1726 Water Depth: 10.89 m.

Northing: 6726161.91m, Easting: 588471.38m. (UTM, Zone 5N)

SAMPLE NUMBER: D2SS01-34-01B

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 1744 Water Depth: 10.92m.

Northing: 6726007.2m, Easting: 588467.06m. (UTM, Zone 5N)

SAMPLE NUMBER: D3SS01-38-01B

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 1937 Water Depth: 3.6m.

Northing: 6725564.01m, Easting: 589264.1m. (UTM, Zone 5N)

SAMPLE NUMBER: D4SS01-06-01A

Alaska LNG
Proj. No. 23-00007123

BOTTOM SAMPLE LOG

Vessel: **R/V Westerly** Date: 09/26/2015 Time (UTC): 1800 Water Depth: 8.74m.

Northing: 6726897.94m, Easting: 588264.88m. (UTM, Zone 5N)

SAMPLE NUMBER: D5ISS01-10-01B

Alaska LNG
Proj. No. 23-00007123

APPENDIX 2-E

EQUIPMENT SPECIFICATIONS
EQUIPMENT DESCRIPTIONS

R/V Westerly

Specifications and Equipment

Year Built 2011

GRT NRT

Call Sign WDF7918

Hull Number US-IAR38CATK011

Hailing Port: Gulfport, MS

Length Overall 50’

Width 15.5’

Depth 1.5’

Top Speed 32 Knots, Cruising 25 Knots

Machinery

Main Engines: 2 Cummins QSC 8.3 Diesel Engines, 500 HP Each

ZF 305 Gears

Hamilton 322 Jet Propulsion Units

Onan 9KW Marine Diesel Generator Set

R/V Westerly

Navigation

Garmin GPSmap 5212, Fully integrated GPS, Chartplotter, Radar, and Depth Sounder. It is also XM Capable With full Nexrad Weather Radar Overlay and Predicted Tides

Simrad AP 28 Autopilot

2 Icom IC-M504 Marine VHF Radios

Spotlight

Tankage

580 gallons Diesel

30 gallons Fresh Water

20 gallon Holding Tank

Survey Equipment

22”x39” Moon Pool with Hydraulic Gantry

Aluminum Hydraulic Spool Winch with Slip Ring and 200’ of Armored Data Cable

Hydraulic A-Frame with Pullmaster PL-2 Planetary Winch

Hull Mounted Odom 200 KHz Single Beam Transducer

Shock Mounted Computer Rack

Air Conditioned Survey Acquisition Station

Safety Equipment

EPIRB

6 Coast Guard Approved Type 2 Life Preservers

2 Fire Extinguishers

Life Sling

Flares

First Aid Kit

Galley

2 Burner Stove Top

Microwave

Refrigerator

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POS MV™ SPECIFICATIONS

ROBUST POSITION AND ORIENTATION SOLUTIONS FOR MARINE MAPPING

Applanix Position and Orientation Systems for Marine Vessels (POS MV) are engineered to support water science data collection operations, particularly those where accurate, uninterrupted, and robust solutions are needed for direct georeferencing and mapping. Professionals involved in surf zone and coastal area mapping, harbor lane surveys, environmental assessments, channel inspection and dredging assessment, offshore resource exploration, erosion mapping, maritime and coastal waterway infrastructure inventory mapping depend on POS MV solutions.

Employing state-of-the-art high precision gyros which are tightly coupled to supporting GPS, the POS MV provides continuous and accurate position and orientation data logging for vessel and sensor guidance. Reliable POS MV output is produced in severe sea conditions, during periods of blocked or intermittent GPS, in areas where GPS reception is compromised by multipath effects, or at times when position drift must be reduced and faster signal reacquisition is essential.

POS MV delivers a full six degree-of-freedom position and orientation solution measuring location, velocity, attitude, and heave plus acceleration and angular rate vectors. Applanix marine solutions are able to affix position and orientation data accurately under the most demanding conditions, regardless of vessel dynamics, 200 times each second, making direct georeferencing and motion compensation for maritime remote sensing operations a productive and practical option.

PERFORMANCE SUMMARY - POS MV Accuracy

POS MV 320	DGPS	RTK	GPS Outage
Position	0.5 - 2 m[1]	0.02 - 0.10 m[1]	<2.5 m for 30 s outages, <6 m for 60 s outages
Roll & Pitch	0.020°	0.010°	0.020°
True Heading	0.020° with 2 m baseline 0.010° with 4 m baseline	-	Drift less than 1° per hour (negligible for outages <60 s)
Heave	5 cm or 5%[2]	5 cm or 5%[2]	5 cm or 5%[2]

POS MV WaveMaster	DGPS	RTK	GPS Outage
Position	0.5 - 2 m[1]	0.02 - 0.10 m[1]	<3 m for 30 s outages, <10 m for 60 s outages
Roll & Pitch	0.030°	0.020°	0.040°
True Heading	0.030° with 2 m baseline	-	Drift less than 2° per hour
Heave	5 cm or 5%[2]	5 cm or 5%[2]	5 cm or 5%[2]

POS MV Elite	DGPS	RTK	GPS Outage
Position	0.5 - 2 m[1]	0.02 - 0.10 m[1]	<1.5 m for 60 s outages DGPS, <0.5 m for 60 s outage RTK
Roll & Pitch	0.005°	0.005°	0.005°
True Heading	0.025°	0.025°	Drift less than 0.1° per hour (negligible for outages <60 s)
Heave	3.5 cm or 3.5%[2]	3.5 cm or 3.5%[2]	3.5 cm or 3.5%[2]

[1] One Sigma, depending on quality of differential corrections
[2] Whichever is greater, for periods of 20 seconds or less

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SYSTEM SPECIFICATIONS

COMPONENT	DIMENSIONS	WEIGHT	TEMPERATURE	HUMIDITY	POWER
PCS-1	L = 432mm, W = 89mm, H = 356mm	5 lb	0 °C to +55 °C	10 - 80% RH	110/230 Vac, 50/60 Hz, auto-switching 80 W
PCS-2	L = 281mm, W = 165mm, H = 90mm	3 lb	-20 °C to +60 °C	5 - 90% RH	24 Vdc, 50 W (peak)

HOUSING AND ADAPTOR PLATES

COMPONENT	DIMENSIONS	IP RATING
Waterproof Housing	L = 209mm, H = 181mm	IP68
Adaptor Plate	L = 135mm, W = 142mm, H = 19mm	IP68

INERTIAL MEASUREMENT UNIT (IMU)

TYPE	DIMENSIONS	WEIGHT	TEMPERATURE	ORIGIN
IMU-1	L = 165mm, W = 162mm, H = 162mm	4.5 lb	-40 °C to +70 °C	US
IMU-2	L = 204mm, W = 204mm, H = 168mm	3.5 lb	-40 °C to +60 °C	US
IMU-3	L = 160mm, W = 160mm, H = 102mm	3.6 lb	-40 °C to +60 °C	US

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

COMPONENT	DIMENSIONS	WEIGHT	TEMPERATURE	HUMIDITY
PS Antenna	L = 187mm, W = 53mm	0.5 lb	-40 °C to +70 °C	0-100% RH

1. ETHERNET INPUT OUTPUT
   - Ethernet: (100 base-T)
   - Parameters: Time tag, status, position, attitude, heave, velocity, track and speed, dynamics, performance metrics, raw IMU data, raw GPS data.
   - Display Port: Low rate (1 Hz) UDP protocol output
   - Control Port: TCP/IP input for system commands
   - Primary Port: Real-time (up to 200 Hz) UDP protocol output
   - Secondary Port: Buffered TCP/IP protocol output for data logging to external device

2. SERIAL RS232 INPUT OUTPUT
   - 5 COM Ports: User assignable to: NMEA output (0-5), Binary output (0-5), Auxiliary GPS input (0-2), Base GPS correction input (0-2)

3. NMEA ASCII OUTPUT
   - Parameters: NMEA Standard ASCII messages: Position ($INGGA), Heading ($INHDT), Track and Speed ($INVTG), Statistics ($INGST), Attitude ($PASHR, $PRDID), Time and Date ($INZDA, $UTC).
   - Rate: Up to 50 Hz (user selectable)
   - Configuration: Output selections and rate individually configurable on each assigned com port.

4. HIGH RATE ATTITUDE OUTPUT
   - Parameters: User selectable binary messages: attitude, heading, speed.
   - Rate: Up to 100 Hz (user selectable)
   - Configuration: Output selections and rate individually configurable on each assigned com port.

5. AUXILIARY GPS INPUTS
   - Parameter: NMEA Standard ASCII messages: $GPGGA, $GPGST, $GPGSA, $GPGSV. Uses Aux input with best quality.
   - Rate: 1 Hz

6. BASE GPS CORRECTION INPUTS
   - Parameter: RTCM 1, 9, 18, 19, CMR and CMR+ input formats accepted. Combined with raw GPS observables in tightly-coupled navigation solution.
   - Rate: 1 Hz

6. DIGITAL I/O
   - 1PPS: 1 pulse-per-second Time Sync output, normally high, active low pulse
   - Event Input (2): Time mark of external events. TTL pulses > 1 msec width, rising or falling edge, max rate 200 Hz.

7. USER SUPPLIED EQUIPMENT
   - PC for POS Controller (Required for configuration): Pentium 90 processor (minimum), 16 MB RAM, 1 MB free disk space, Ethernet adapter (RJ45 100 base T), Windows 98/2000/NT/XP
   - PC for POSPac Post-processing Software: Pentium III 800Mhz or equivalent (minimum), 256 MB RAM, 400 MB free disk space, USB Port (For Security Key), Windows 2000/XP

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GAPS

FOURTH-GENERATION USBL ACOUSTIC POSITIONING SYSTEM

The **iXBlue** fourth-generation pre-calibrated **GAPS** combines high performance ultra-short baseline (USBL) and a fiber-optic inertial navigation system (INS) in the same housing to provide accurate position of any subsea object, in diverse and challenging environments. Its performance ranges from extremely shallow water to deep sea. Its compact and all-in-one design allows both portable and permanent installations. One of **GAPS** key new features is support of dynamic positioning (DP).

FEATURES

- Integrates USBL, high-grade INS, real-time positioning and GPS
- Position accuracy: 0.06% x slant range
- Advanced signal processing and 3D acoustic antenna for range and accuracy performance
- Powerful dynamic positioning (DP) mode (L/USBL/INS)

BENEFITS

- Cost- and time-saving deployment: flexible, portable, pre-calibrated, rapid, and simple
- Robust performance in very shallow water (10 m depth) to long range (> 4000 m depth)
- Deployment options, from surface buoy, side pole, moon pool or hull mounted
- Universal utilization

APPLICATIONS

• Offshore, AUV and ROV navigation • Underwater survey and inspection • Drilling • Dynamic positioning (DP) • Structure placement • Pipeline and cable deployment • Diver tracking • Seismic • Ocean science • Defense • Renewable energy industries

iXBLUE
DEEP INSIGHT. SHARPER SENSES.

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PERFORMANCE

Subsea positioning

Position accuracy (CEP50)	0.06 % of the slant range [1]
Nominal range	4 000 m [2]
Antenna coverage	200 deg hemispherical

Surface positioning

Heading accuracy	0.01 deg x secant latitude
Roll / pitch accuracy	0.01 deg

COMPATIBLE TRANSPONDERS AND SENSORS

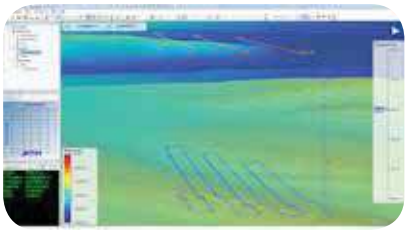
iXBlue mini transponders	OCEANO MT8 x 2, OCEANO MT9 x 2, OCEANO MTA x 2
iXBlue midi transponders	OCEANO ETA62 and releasable OCEANO RTA62
Third party wide band transponders	Optional
iXBlue inertial-acoustic solution integration	PHINS, ROVINS, RAMSES

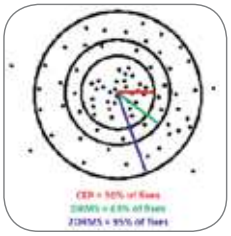
OPERATING / ENVIRONMENT / MECHANICAL

Power supply / consumption	24 – 36 VDC or 110 – 230 VAC / 50 W
Weight in air / water	15 kg / -7 kg (positive buoyancy)
Dimensions (Ø x H)	295 mm x 638 mm
Array depth rating	20 m (100 m survival)
Operating / storage temperature	-5°C to 35°C / -40°C to 70°C

INTERFACES

Control command	Standard iXBlue web-based user interface
Input / output	Quad RS232 / RS422 / Ethernet Trigger I/O pulse port and PPS / Sync ports
Protocols	Library of NMEA protocols (standard telegrams for all DPs)





1 signal to noise ratio > 40 dB, in vertical conditions
2 noise level < 65 dB / √Hz @ 1 m ref µPa

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2014-02-PS-GAPS

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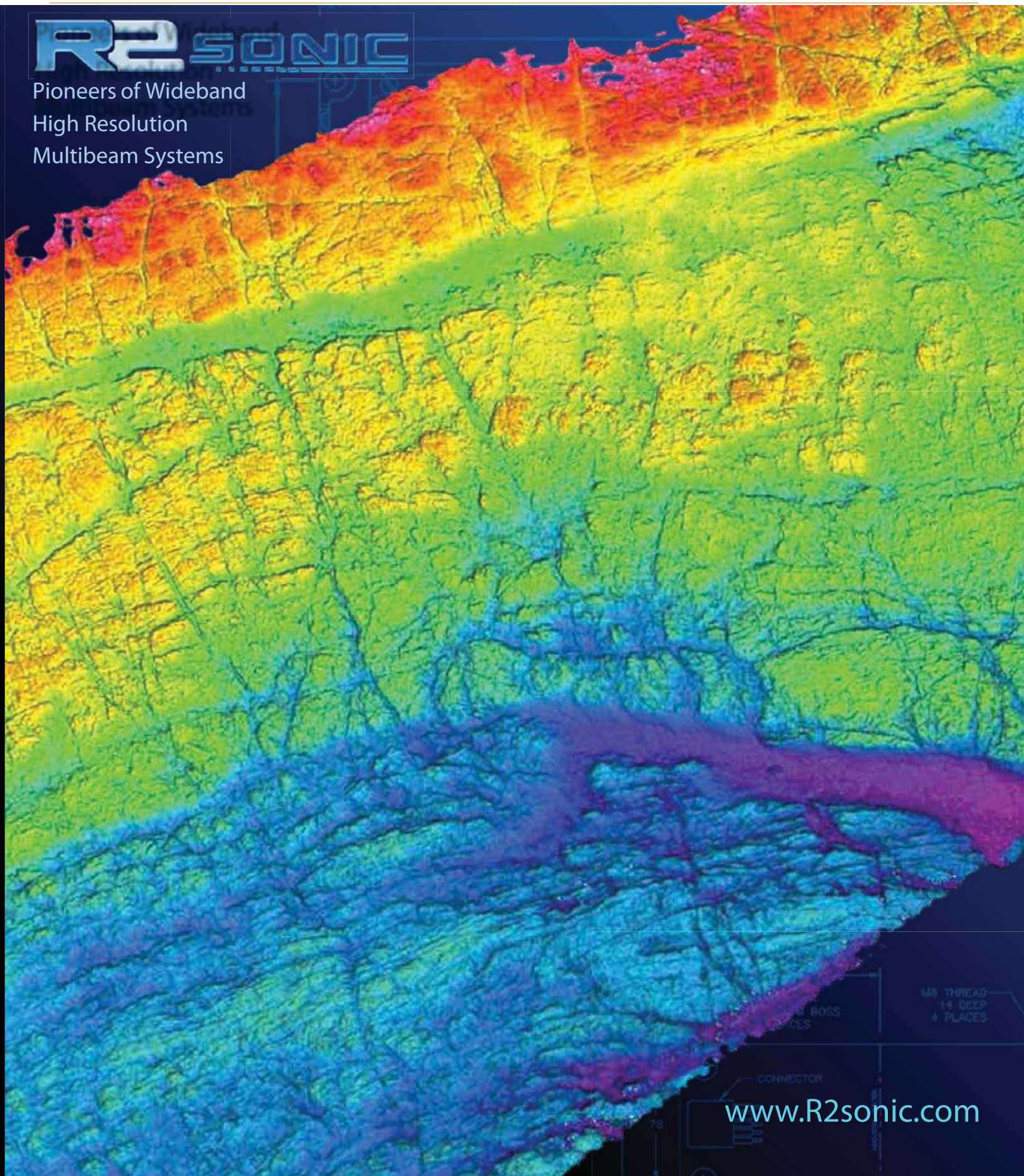

Company Profile

R2Sonic was founded in February 2006 by three veteran underwater acoustical engineers; Jens R. Steenstrup, Mark Chun and Kirk Hobart; with the mission to utilize their experience to bring high quality, leading edge underwater acoustic products to the private and public sectors, with focus on customer needs.

R2Sonic founders and personnel bring over 30 years of market driven quality engineering design and manufacturing experience, utilizing "best practice" design and manufacturing process.

R2Sonic brings pioneering values to the industry. With the launch of the innovative Sonic 2026, 2024, 2022 and 2020 Broadband / Wideband Multibeam Systems, R2Sonic has redefined the Multibeam market with unparalleled performance with unique system features and application growth capabilities.

Facilities

The R2Sonic Headquarters are conveniently located 10 minutes from Austin city center, 10 minutes from Lake Travis and 15 minutes from the International airport, in the high technology corridor. The facilities are well equipped with modern instrumentation and software tools necessary for the efficient modeling, development and test of underwater acoustical equipment.

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Systems Overview

The Sonic Broadband / Wideband Multibeam Echo Sounders represent the latest in advanced underwater acoustic technology.

The Sonic Broadband / Wideband Multibeam Echo Sounders are the world's first true wideband high resolution shallow water multibeam echo sounders. With proven results and unmatched performance, R2Sonic systems produce reliable and remarkably clean data with maximum user flexibility.

The unprecedented 60 kHz signal bandwidth offers twice the resolution of other commercial sonar in both data accuracy and imagery.

With over 20x selectable operating frequencies to choose from within the 200 to 400 kHz band, the user is not limited by two or three operating frequencies and thus can trade off resolution and range and effectively control interference from other active acoustic systems.

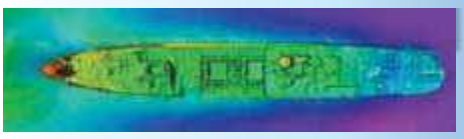
In addition to selectable operating frequencies, Sonic systems provide variable swath coverage selections from 10° to 160° on the fly, in real-time and across all frequencies from 200 to 400 kHz. The operator may also rotate the sector to precise location either port or starboard side of the vessel on the fly, in real-time.

When a narrow sector is selected, all soundings are concentrated within the swath for increased resolution over small scale bottom features. Wide swath sectors are typically used for general mapping or when surveying vertical surfaces such as quays, breakwaters, dams, pilings or bridge abutments as the increased opening angles eliminate need to rotate the sonar head.

Equidistant beam spacing, roll stabilization, dual / quad density modes, saturation monitor and a unique automated range, gate and slope tracking functions are incorporated for Sonic systems, increasing system overall efficiency.

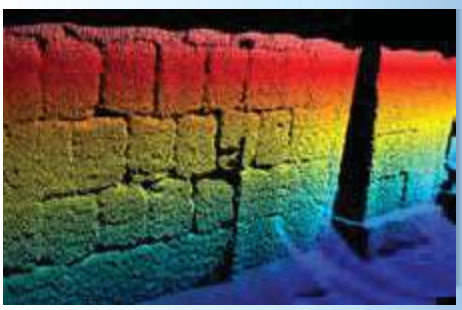
Advanced optional functions including Ultra-High Resolution 700 kHz for Sonic 2024 and 2022, providing unprecedented narrow beam widths, 100 kHz operation for Sonic 2026 with max range setting to 1200m, TruePix™ Backscatter output, Raw Water Column and Switchable Forward Looking Sonar output are also provided.

R2Sonic systems are supplied in depth ratings of 100m, or optional 4000m or 6000m for ROV/AUV operations.



30°-45° coverage, for increased resolution over bottom features

Quad density for efficient beam distribution in smaller bin sizes



160° coverage, for mapping high up vertical surfaces

Components

Sonic 2026

Sonic 2024

Sonic 2022

Sonic 2020

Sonar Interface Module (SIM)

Sonic Wideband Multibeam systems represent new modern design and architecture, unencumbered by legacy designs.

The heavy, bulky and power consuming topside electronic components that characterize old multibeam echo sounder technology have been eliminated.

The sonar consists of three major components: a compact projector, a receiver and a small dry side Sonar Interface Module (SIM). The extremely low power draw of 75W (2026), 50W (2024), 35W (2022) and 20W (2020) makes it possible to operate the systems on vessel battery power.

Unlike other commercial shallow water multibeam echo sounder systems, sonar processing is embedded in the receiver, dramatically increasing system efficiency and simplicity in integration

Third party auxiliary sensors are connected to the Sonar Interface Module (SIM). The sonar data is tagged with GPS time. The compact size, low weight, low power consumption and elimination of separate topside processors make Sonic Wideband Multibeam systems very well suited for small survey vessel or ROV/AUV operations.

R2Sonic Wideband Multibeam Systems were specifically designed for use on AUV's, with its low power consumption, and elimination of the topside processor for more compact size and weight. AUV integration requires only an interface board the size of a PC/104, Ethernet ports, and the provision of isolated 48V DC power.

Operation

The sonar operation is controlled from a graphical user interface (GUI) on a PC or laptop, which is typically equipped with navigation, data collection and storage application software. The operator sets the sonar parameters in the sonar control window, while depth, imagery and other sensor data are captured and displayed by the application software. Commands are transmitted through an Ethernet interface to the Sonar Interface Module (SIM). The SIM supplies power to the sonar heads, synchronizes, time tags sensor data, and relays data to the application workstation and commands to the sonar head.

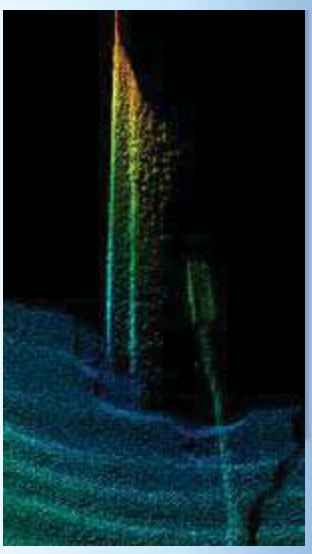
The receiver head decodes the sonar commands, triggers the transmit pulse, receives, amplifies, beamforms, bottom detects, packages and transmits the data through the SIM via Ethernet to the control PC.

Sonar Options

The Sonic Series Wideband Multibeam Echo Sounders represent the latest in advanced modern system design and architecture, providing unprecedented system versatility, productivity and performance.

The Sonic system sonar processing is embedded at point of reception inside the sonar receiver, dramatically increasing efficiency and simplicity in integration. The streamlined architecture provides unmatched system modularity, whereby current hardware components are interchangeable and new hardware, firmware and options are easily upgradeable from the field.

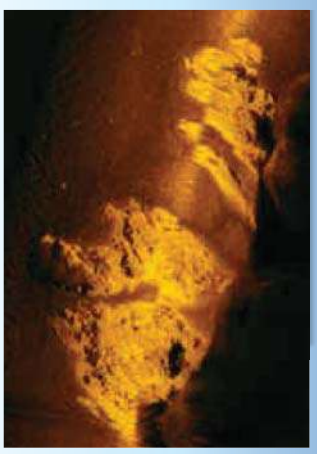
Ultra High Resolution (UHR)



The Sonic 2024 and Sonic 2022 can be upgraded to provide extremely narrow beam widths at 700 kHz operation. The narrow beam widths at 700 kHz make this option invaluable for detail offshore site surveys such as pipeline inspections, cable laying operations, archeological wreck surveys or other micro bathymetry applications. When UHR 700kHz is selected, the beam width is 0.3° x 0.6° (2024) and 0.6° x 0.6° (2022), providing unprecedented small bottom footprints.

The Ultra High Resolution option is embedded in UHR capable projectors and can be easily enabled from the field with option purchase.

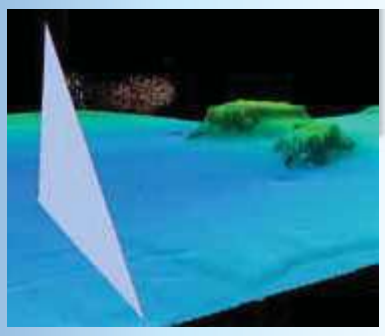
TruePix™ Backscatter



TruePix™ is a process that is independent from the bottom detection, and like Digital Side scan, can be used in data editing to determine whether the data points are outliers or real. Unlike Snippets, TruePix™ assembles the imagery record with one sample per range bin per side, so file sizes are smaller and there is no overlapping data pieces to be merged and reduced into a single record, producing uniform quality data.

TruePix™ outputs angles associated with each imagery point in contrast to Snippets that only report the angle of the center point of each snippet. This increases the number of angular measurements by an order of magnitude or more. In addition, TruePix™ provides highly compact water column imagery which can be used to map targets in the water column and to assist in least depth determinations.

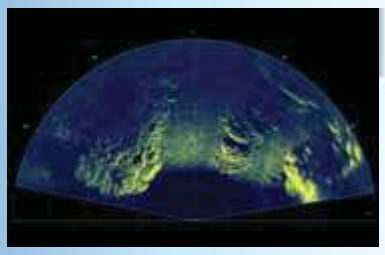
TruePix™ option is embedded in all R2Sonic systems and can be easily enabled from the field with option purchase.



Raw Water Column Data

Raw beam formed water column data output provides increased functionality for Sonic Wideband Multibeam Echo Sounders with the ability to collect simultaneous and co-registered bathymetry, backscatter and water column backscatter data for variety of applications including pelagic fisheries habitat mapping, methane seep investigation and more.

The raw display image is available as part of the operator interface and optional software may be provided for logging as well as 2D and 3D data analysis. Raw Water Column option is embedded in all R2Sonic Systems and can be easily enabled from the field with option purchase.



Switchable Forward Looking Sonar

The Switchable Forward Looking Sonar (FLS) Imaging Option is available for all R2Sonic Wideband Multibeam Echo Sounders.

When enabled, the option allows the user to easily switch from operating the Sonic system in a bathymetric mode to a forward looking imaging mode which can either project a wide 20°, or narrow vertical beam. In imaging mode the operator will see a plan view ahead of the sonar in real time. Switchable Forward Looking Sonar option is embedded in FLS capable projectors and can be easily enabled from the field with option purchase.

Integrated Inertial Navigation System (I2NS)

The Inertial Navigation System (INS) integrates seamlessly with the Sonic MBES enabling the user to obtain the most accurate and robust motion compensation solution for hydrographic surveying encompassing vessel latitude, longitude, altitude, heave, pitch, roll and heading.

All processing and interfaces are integrated into the Sonar Interface Module (SIM) with connections for dual GNSS antennas and the small waterproof Inertial Measurement Unit (IMU). The GNSS antennas track all available GPS,GLONASS, Galileo and Geostationary satellites, including support for Fugro Marinestar GPS and GNSS services.

Main Advantages

- Roll / Pitch Accuracy to 0.02°
- Heading Accuracy to 0.03° with 2m antenna baseline
- Heave Accuracy to 2cm or 2%
- Centimetric Positioning with Inertially Aided RTK
- High Immunity to GNSS Outages
- Small, lightweight IMU in waterproof housing
- Seamlessly integrated with Sonic MBES
- Affordable price

Immersion Depth Rating

Sonic Wideband Multibeam Echo Sounders are 100m immersion depth rated as standard. 4000m and 6000m immersion depth rated options for ROV/AUV applications are available. For 4000m and 6000m rated systems, extensive pressure testing is performed and supplied with pass rating certificate to ensure performance to specified depth. Systems are typically pressure tested at time of order, but can also be upgraded at any time with return of unit to R2Sonic facility.

Mounting Hardware & Assemblies

Basic mounting hardware is supplied as standard with each system. A lightweight and easy to assemble mounting bracket and fairing is supplied as an option for all systems. Dual head mounting brackets are also supplied. The Sonic mount bracket & fairing is designed to reduce cavitation around the receiver array and includes protection for the system. Mount brackets include circular zinc anodes which can be replaced over time. A built-in delrin bracket for a sound velocity probe is included which secures the probe in ideal position for water flow over sensor. All cables including the receiver, transmit projector and sound velocity probe are conveniently fitted either inside the flange for protection or outside of flange.

Antifouling Coating Protection

Barnacle build up is a bane to many customers who incorporate high value acoustic sensors to vessel hull. In some environments build up can be severe, blocking the active sensor components effecting performance and requiring expensive dry docking and labor hours to clean.

R2Sonic offers a unique non-ablative, non-toxic, antifouling coating protection option for Sonic Wideband Multibeam Systems. Antifouling is traditionally an opaque primer applied on the sensors during sensor installation process. These traditional antifouling primers may be toxic and degrade over time, requiring reapplication. The optional antifouling coating protection offered for Sonic Wideband Multibeam Systems is clear, with non-stick, non-toxic properties and designed to last over life of the sensor without degradation to system performance. The coating is applied to the array face and active elements during manufacturing in a controlled process, ensuring professional application and quality assurance.

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Frequency	200 to 400kHz Optional 100kHz Over 20 Frequency selections User selectable in real-time	200 to 400kHz Optional 700kHz Over 20 Frequency selections User selectable in real-time	200 to 400kHz Optional 700kHz Over 20 Frequency selections User selectable in real-time	200 to 400kHz Over 20 Frequency selections User selectable in real-time
Bandwidth	Up to 60kHz	Up to 60kHz	Up to 60kHz	Up to 60kHz
Beamwidth	0.5°x 0.5° at 400kHz 1°x 1° at 200kHz 2°x 2° at 100kHz (Optional)	0.3°x 0.6° at 700kHz (Optional) 0.5°x 1° at 400kHz 1°x 2° at 200kHz	0.6°x 0.6° at 700kHz (Optional) 1°x 1° at 400kHz 2°x 2° at 200kHz	2°x 2° at 400kHz 4°x 4° at 200kHz
Swath Sector	10° to 160° All frequency selections User selectable in real-time	10° to 160° All frequency selections User selectable in real-time	10° to 160° All frequency selections User selectable in real-time	10° to 130° All frequency selections User selectable in real-time
Sounding Depth*	600m+	400m+	400m+	75m+
Ping Rate	Up to 60 Hz	Up to 60 Hz	Up to 60 Hz	Up to 60 Hz
Range Resolution	Down to 1.25cm	Down to 1.25cm	Down to 1.25cm	Down to 1.25cm
Pulse Lengths	15µsec-2ms	15µsec-1ms	15µsec-1ms	15µsec-1ms
Number of Soundings (Normal, Dual, Quad)	256 / 512 / 1024	256 / 512 / 1024	256 / 512 / 1024	256 / 512 / 1024
Operating Modes	Normal, Dual, Quad	Normal, Dual, Quad	Normal, Dual, Quad	Normal, Dual, Quad
Near-field Focusing	Yes	Yes	Yes	Yes
Equiangular or Equidistant Beams	Yes	Yes	Yes	Yes
Roll stabilization	Yes	Yes	Yes	Yes
Pitch stabilization	Yes	No	No	Yes
Automated Operation	Yes	Yes	Yes	Yes
Saturation Monitor	Yes	Yes	Yes	Yes
Depth Rating	100m Optional 4000m**, 6000m**	100m Optional 4000m**, 6000m**	100m Optional 4000m**, 6000m**	100m Optional 4000m**
Operating Temp	-10°C to 50° C	-10°C to 50° C	-10°C to 50° C	-10°C to 50° C
Storage Temp	-30°C to 55° C	-30°C to 55° C	-30°C to 55° C	-30°C to 55° C
Mains	90-260 VAC, 45-65Hz	90-260 VAC, 45-65Hz	90-260 VAC, 45-65Hz	90-260 VAC, 45-65Hz
Power Consumption	75W avg.	50W avg.	35W avg.	20W avg.
Uplink/Downlink	10/100/1000Base-T Ethernet	10/100/1000Base-T Ethernet	10/100/1000Base-T Ethernet	10/100/1000Base-T Ethernet
Deck Cable Length	15m, optional 25m, 50m	15m, optional 25m, 50m	15m, optional 25m, 50m	15m, optional 25m, 50m
Receiver Dim (LWD)	480 x 109 x 190mm	480 x 109 x 190mm	276 x 109 x 190mm	140 x 161 x 133.5mm
Receiver Mass (Air)	12.9 kg	12.9 kg	7.7 kg	4.4 kg
Projector Dim (LWD)	480 x 109 x 196mm	273 x 108 x 86mm	273 x 108 x 86mm	N/A
Projector Mass (Air)	13.4 kg	3.3 kg	3.3 kg	N/A
SIM (LWD)	280 x 170 x 60mm	280 x 170 x 60mm	280 x 170 x 60mm	280 x 170 x 60mm
SIM Mass	2.4 kg	2.4 kg	2.4 kg	2.4 kg

*Depending on environmental conditions
**Range setting limited to 200m at immersion depths >100m
**Optional no range limiter at immersion depths > 100m

Sonar Options

- Snippets & TruePix™ Backscatter Imagery
- Raw Water Column Data
- Switchable Forward Looking Sonar
- Ultra High Resolution (UHR) 700 kHz (2024,2022)
- 100 kHz Frequency (2026)
- 4000m & 6000m Immersion Depth Rating
- Integrated Inertial Navigation System (I2NS)
- Mounting Hardware & Assemblies
- Antifouling Coating Protection

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Cover image: Produced by Sonic 2024/Hypack, edited with IVS Fledermaus software, offshore UK in 8-20m water depths. Image courtesy of Aspect Land & Hydrographic Surveys, UK.

Alaska LNG

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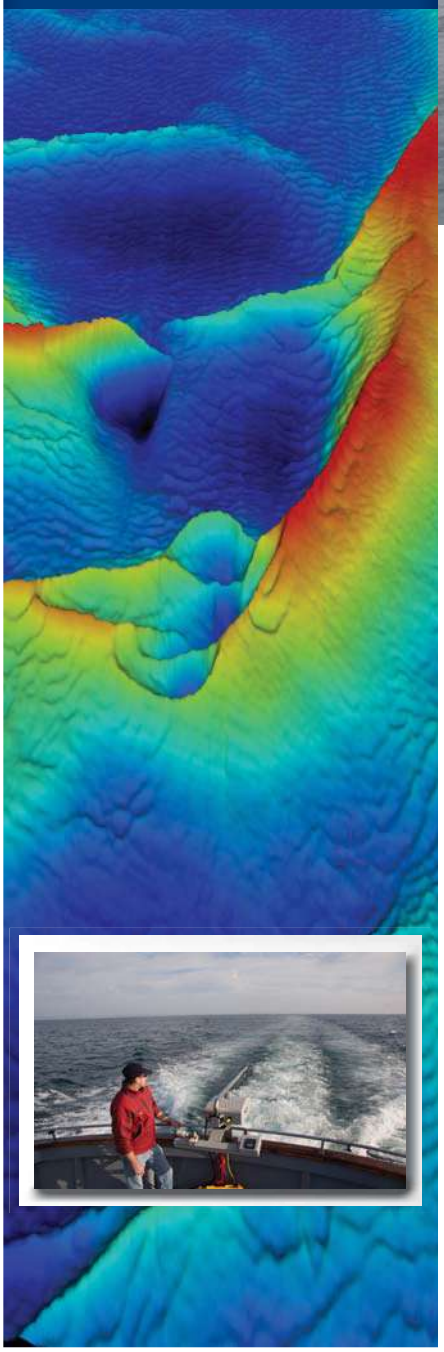
UnderwaySV

Sound Velocity Profiling From A Moving Vessel



Sound Velocity Profiles From A Moving Vessel

The Oceanscience UnderwaySV offers vertical sound velocity (SV) profiles in minutes, without ever having to stop the survey vessel. The latest Valeport digital sound velocity measurement technology is combined with the innovative Oceanscience underway sensor deployment system to generate a revolutionary new tool for hydrographic surveying. Easy to use, portable, compact and affordable, the UnderwaySV saves survey time and promotes a better understanding of sound speed variability for optimum survey results.

Valeport Freefall Sound Velocity Profiler

The Valeport-designed sound velocity profiler is tethered to the UnderwaySV winch mounted on the survey vessel by up to 2km of high strength line. The profiler is simply released from the winch and falls through the water column at up to 5m/s until the target depth is reached. The winch is then engaged to recover the probe without any change in vessel speed throughout the deployment procedure. Upon recovery, profiles are downloaded using a Bluetooth link and the profiler is ready for re-deployment.

Deep Water Profiling Option

For sound speed profiles deeper than 350-450m, the UnderwaySV system can be expanded to include the tail spool rewinder. The rewinder pre-loads line from the main winch onto a special tail spool attached to the profiler. Upon deployment, line spools off the tail as the profiler drops, with casts down to 700m possible at a survey speed of 8kts.

Maximize Bathymetric Survey Data Quality

The UnderwaySV is ideal for surveys where fluctuations in temperature or freshwater intrusion may create highly complex sound speed patterns. The rapid profiling afforded by the UnderwaySV minimizes downtime and costs to quantify these sound velocity features.

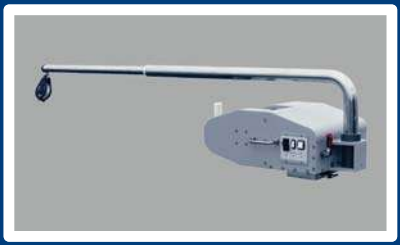
Use No Expendable components

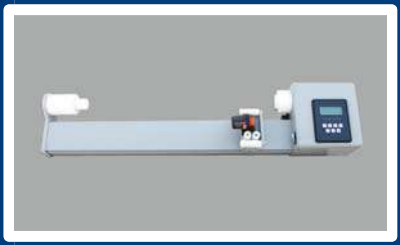
Operating costs for the UnderwaySV are minimal. The system requires little maintenence and the profiler returns to the ship after every cast, leaving no trace in the environment.

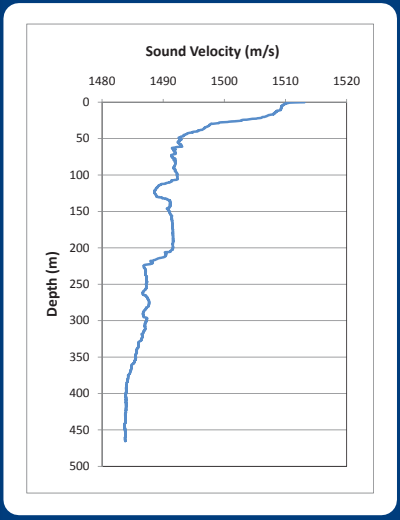
Alaska LNG

FUGRO

UnderwaySV







EXAMPLE PROFILE:
470M CAST CONDUCTED AT 10KTS

OCEANSCIENCE

UnderwaySV Components

Main Winch

The UnderwaySV winch features a large capacity reel with a high-torque DC drive unit and motorized levelwind, for fast and safe probe deployment and retrieval. The reel holds up to 2000m of high strength line for maximum profiling flexibility. The main winch not only pays out line during deployment as the probe drops through the water column, but is rotated to provide line for re-spooling onto the probe tail using the rewinder for deep profiling. A compact 1500 W power supply (110/220 VAC, 50/60 Hz input) provides power to all system components.

Rewinder (For Deep Water Profiling)

The microprocessor controlled UnderwaySV tail spool rewinder precisely loads the profiler tail spool with high strength line, typically 350 to 550m of line is added from the main winch for each deployment. The unit may be programmed for different profile depths and is automated for quick turnaround.

Valeport "RapidSV" Probe System

The Valeport RapidSV free fall sound velocity profiler is robust enough to handle underway deployment and highly accurate, to offer the best possible SV data for sound speed corrections. The profiler falls at up to 5m/s, but a sampling rate of 32Hz assures a fine vertical resolution in sound speed data. The transducer is mounted in a hydrodynamic nose section to ensure excellent water flow, and electronics are housed in a 2000m rated titanium casing. A Bluetooth module allows fast and easy data recovery as soon as the probe is out of the water.

Configuration Options

For shallow water profiling, the UnderwaySV main winch and RapidSV probe system (A) will be a cost-effective solution for underway deployments. For deep water surveys, with profiling depths of over 1000m while underway, opt for the full specification UnderwaySV including the main winch, tail spool rewinder and RapidSV profiler (B).

	Vessel Speed			
	0kts	4kts	8kts	10kts
A. Shallow Survey	650m	350m	250m	200m
B. Deep Survey	1100m	700m	600m	550m

Contact Information

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info@oceanscience.com

Alaska LNG

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VALEPORT

rapidSV Profile

The Valeport rapidSV profiler has been developed for the fast collection of Sound Velocity Profiles, without compromising the quality of the data.

The world's most accurate Sound Velocity sensor with virtually instantaneous response time, data acquisition rates of up to 32Hz housed in a low drag housing result in the highest quality profiles at drop rates over 5 m/s

Specifications

The rapidSV Profiler is fitted with Valeport's digital time of flight sound velocity sensor, strain gauge pressure transducer and optional PRT temperature sensor.

Sound Velocity

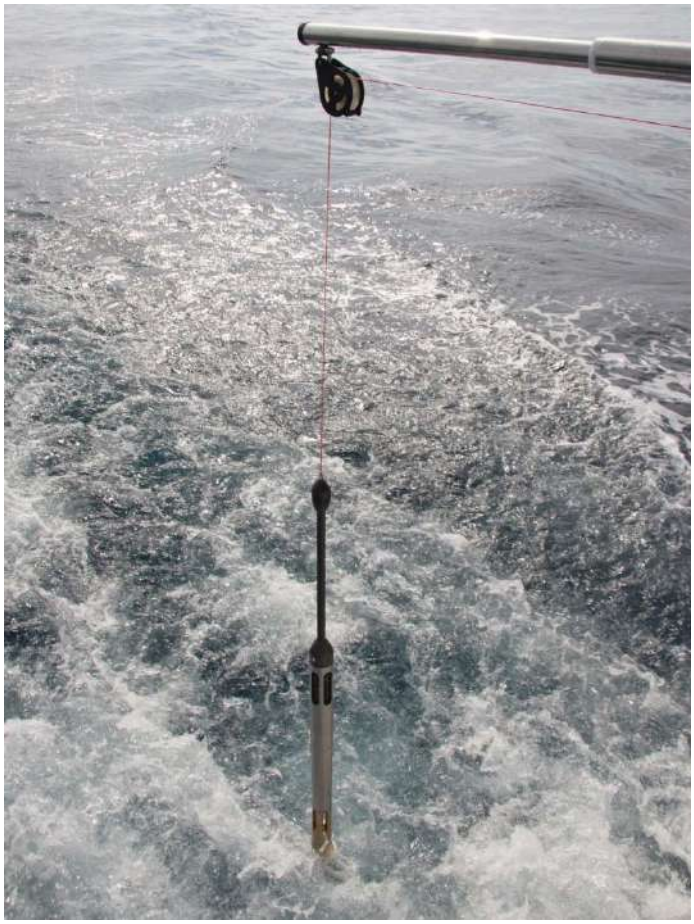
Range:	1375 - 1900m/s
Resolution:	0.001m/s
Accuracy:	±0.02m/s

Pressure

Range:	200 Bar
Resolution:	0.001% range
Accuracy:	±0.05% range

Temperature (Optional)

Range:	-5°C to +35°C
Resolution:	0.001°C
Accuracy:	±0.01°C



Data Acquisition

Sample Rate dependent on configuration

Rate	SV+P	SVP+T	Depth Resolution
16Hz	●	●	~40cm
32Hz	●		~20cm

The optional temperature sensor gives valuable information about the physical structure of the ocean with the trade off of reducing the maximum data acquisition rate to 16 Hz.

Communications

Integral Bluetooth for configuration & data recovery

Memory

The rapidSV Profiler is fitted with a solid state non-volatile Flash memory, capable of storing over 10 million lines of data.

Electrical

Battery	1 x C cell, 1.5v alkaline or 3.6v lithium
Battery Life	approx 25 hours operation (alkaline) approx 80 hours operation (lithium)

Physical

Materials	Titanium housing, Aluminium-Bronze nosepiece, polycarbonate & composite sensor components
Depth Rating	2000m
Instrument Size	Sensor Body Ø50mm x Length 515mm
Weight	~3kg (in air)

Software

System is supplied with DataLog Express Windows based PC software, for instrument setup, data extraction and display.
DataLog Express is licence free

Ordering

0660021	rapidSV Profiler in titanium housing, DataLog Express software, manual and transit case.
0660022	rapidSV Profiler with Temperature in titanium housing, DataLog Express software, manual and transit case.

Datasheet Reference: rapidSV version 2A, Feb 2011

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Sound Velocity Smart Sensor

The SV Smart Sensor is a low cost instrument designed to measure sound velocity in water. This highly adaptive sensor is ideal for integration into existing data collection platforms or OEM equipment. Connect it directly to a PC or combine it with an AML Smart View hand-held display and hand hauled profiles can be conducted in real-time. Its small size, extremely fast response time and high sampling rate make the sensor ideal for fast profiles or tow speeds.

Each sensor has internal calibration coefficients and outputs real-time data to allow a "plug and play" environment. The optional addressable features provide for daisy chaining with other sensors allowing the user to create their own system.

Sensor

- Proprietary "Time of Flight" technology
- 1400 to 1550 m/s measuring range
- ±0.050 m/s accuracy
- 0.015 m/s resolution
- 145 µs response time
- Temperature compensated

Electrical

- 35 samples per second maximum
- RS-232 ASCII communications
- Optional RS-485 or TTL
- Autobaud rates from 2,400 to 38,400 baud

Power

- 30 mA sampling current
- External 8 – 16 Vdc (12 Vdc nominal)
- Optional power configurations available upon request

Mechanical

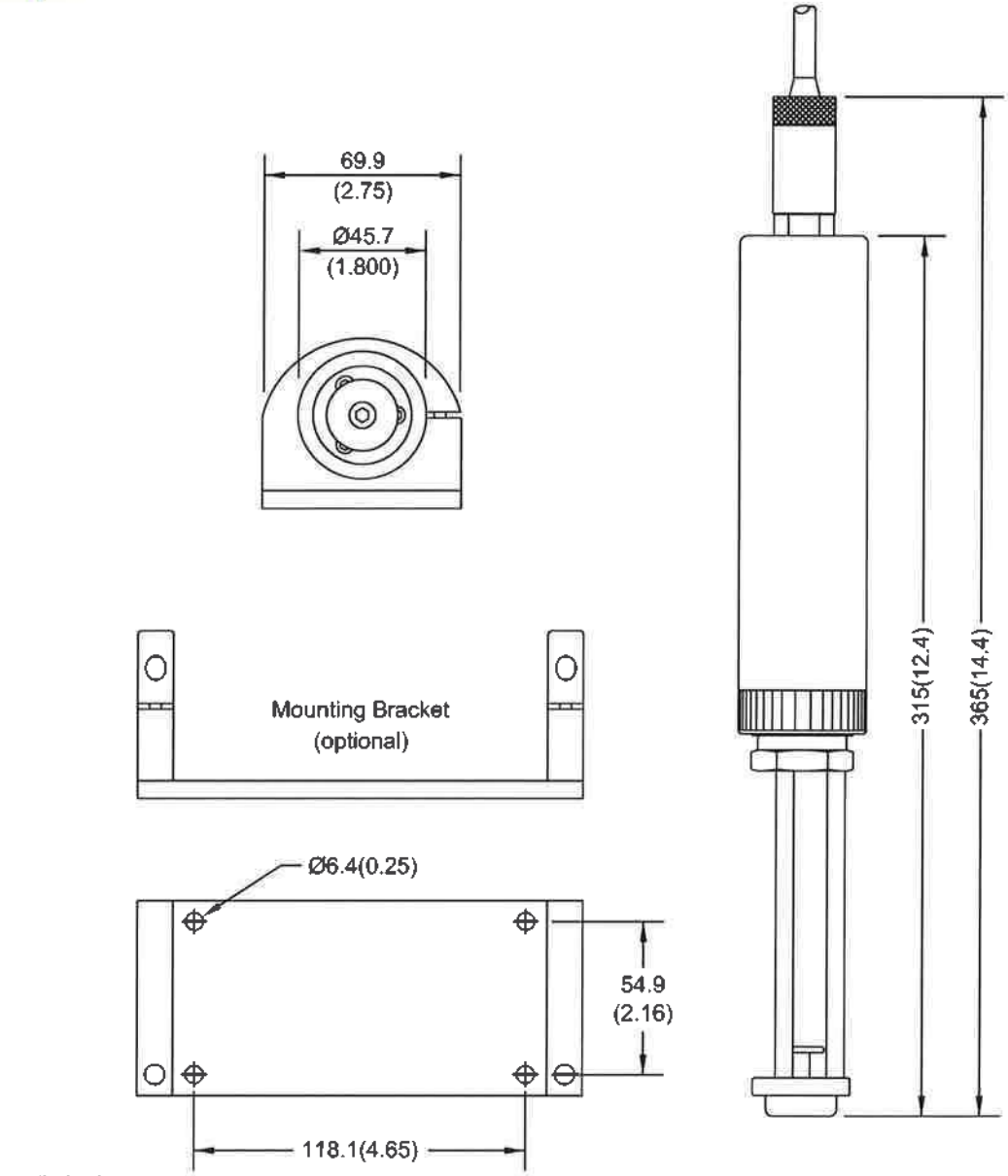
• Weight:	515 grams (1.14 pounds) in air 177 grams (0.4 pounds) in water
• Dimensions:	45.7 mm (1.80″) Ø x 315 mm (12.40″)
• Construction	Type 316 stainless steel sensor and reflector plate, INVAR rods and acetal housing rated to 500 meters. Optional: Type 316 stainless steel housing rated to 4,500 meters. Optional: Titanium housing rated to 10,000 meters.
• Connector:	IMPULSE Miniature Wet Pluggable™ Series Optional connector configurations available.
• Environment:	Operating: -20°C to 50°C Storage: -40°C to 60°C

Instrumentation THROUGH *Innovation*

APPLIED MICROSYSTEMS LTD

Smart Talk Data Logging Software is included at no charge with every sensor.

Mechanical Details:



mm(inches)

Instrumentation THROUGH Innovation

APPLIED MICROSYSTEMS LTD

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1 800 663 8721 (Canada & USA)
info@AppliedMicrosystems.com

Alaska LNG

FUGRO

ECHOTRAC™ CV-100

DIGITAL SURVEY ECHO SOUNDER

- Ethernet port for Control and Output plus 4 serial ports
- Frequency Agile Transceiver
- Small Size, rugged construction, waterproof (IP-67 protection)
- 9 to 32 VDC Power (< 15 watts)

TELEDYNE
ODOM HYDROGRAPHIC
A Teledyne Technologies Company

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FUGRO

ECHOTRAC™ CV-100

Move into the digital age with echo sounders from Teledyne Odom Hydrographic. If your survey does not require traditional paper records, then forget about piles of hard copy—the CV-100 has eliminated all that in favor of digital imaging on a PC-based data acquisition system.

With the same technology as the popular Echotrac CV and Echotrac MKIII, including Ethernet communications, Teledyne Odom's CV-100 single frequency is ready to make your transition to the convenience of all-digital systems painless and worry-free.

GENERAL SPECIFICATIONS

Tx/Rx Frequency
(Frequency agile in 2 bands (specify band at time of order)
- High: 100 kHz – 750 kHz (manual tuning in 1 kHz steps)
- Low: 10 kHz – 50 kHz (manual tuning in 1 kHz steps) variable Receiver bandwidth

Resolution
- 0.01 M, 0.1 ft.

Accuracy
(Corrected for sound velocity)
- 200 kHz – 0.01 m +/- 0.1% depth
- 33 kHz – 0.10 m +/- 0.1% depth

Output Power
- Up to 300 watts RMS
- < 1 watt minimum

Ping Rate
- Up to 20 Hz in shallow water (10 m) range

Depth Range
- From <30 cm to 600 m (depending on frequency and transducer selected)

Input Power Requirement
- 9-32 V DC < 15 watts

Weight
- 5 kg (11 lbs)

Dimensions
- 28 cm W (11 in) x 23 cm H (9 in) x 11.5 cm (4.5 in) D

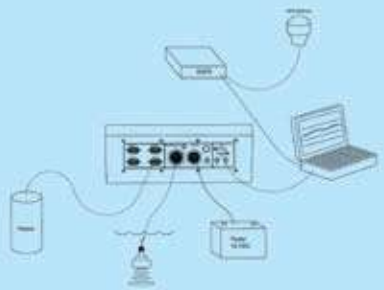
Mounting
- Desktop or bulkhead mount (fixing hardware included)

Ports/Interface:
- Ethernet (LAN) plus
- 4 x RS232 or 3 x 232 and 1 x RS422
- Inputs from external computer, motion sensor, sound velocity
- Outputs to external computer or remote display
- Output string: Odom Echotrac SBT, NMEA DBS, NMEA DBT, DESO 25
- Heave Input –TSS1 or "Sounder Sentence"
- Echotrac Control SW - Simple Windows compatible graphical user interface
- Storage of full ping to seabed data in DSO format with e-Chart (Easily compressed or converted to .XTF for additiona processing)

FEATURES

- **Multiple TVG (time varied gain) curves (10, 20, 30, and 40 log)**
- **Auto gain control**
- **DSP digitizer with manual filter control**
- **Manual or auto scale changes (phasing)**
- **Calibration menu with controls for transducer draft and index plus sound velocity and bar depth controls**
- **Waterproof (IP67)**
- **Help menus**
- **Flash memory upgradeable**
- **Auto Gain and Auto Power Modes for minimal operator input**
- **SILAS compatible output**

▶ **CONFIGURATION EXAMPLE:** CV-100



TELEDYNE ODOM HYDROGRAPHIC
A Teledyne Technologies Company

▶ See our entire product line at: **odomhydrographic.com**

Alaska LNG

FUGRO

4200 SERIES

SIDE SCAN SONAR SYSTEM

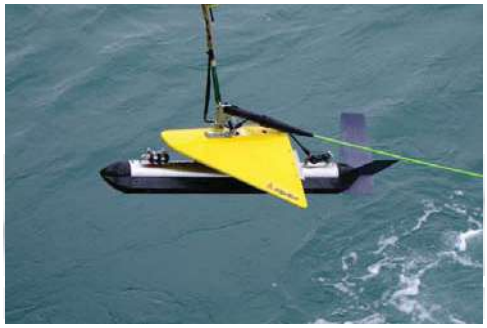
EdgeTech
An Affiliate of ORE Offshore

FEATURES

- Optional Multi-Pulse (MP) technology for high speed surveys
- Crisp, high resolution CHIRP images
- Multiple dual simultaneous frequency sets to choose from
- Choice of stainless steel or lightweight aluminum towfish
- Easily integrates to other 3rd party sensors
- Meets IHO & NOAA Survey Specifications

APPLICATIONS

- Cable & Pipeline Surveys
- Geological/Geophysical Surveys
- Mine Countermeasures (MCM)
- Geohazard Surveys
- Channel Clearance
- Search and Recovery
- Archeological Surveys



The 4200 Series is a versatile side scan sonar system that can be confi gured for almost any survey application from shallow to deep water operations. The 4200 utilizes EdgeTech's Full Spectrum® CHIRP technology to provide crisp, high resolution imagery at ranges up to 50% greater than non-CHIRP systems; thus allowing customers to cover larger areas and save money spent on costly surveys.

One of the unique features of the 4200 is the optional Multi-Pulse (MP) technology, which places two sound pulses in the water rather than one pulse like conventional side scan sonar systems. This allows the 4200 to be towed at speeds of up to 10 knots while still maintaining 100% bottom coverage. In addition, the MP technology will provide twice the resolution when operating at normal tow speeds, thus allowing for better target detection and classifi cation ability. The addition of the optional MP technology provides the operator with two modes of operation; either High Defi nition Mode (HDM) or High Speed Mode (HSM). This software-selectable mode of operation provides the operator the ability to select the best confi guration for the specific job type.

A 4200 system comes with a choice of a dual simultaneous frequency towfi sh available in either a stainless steel or lightweight aluminum housing depending on operational requirements. Customers can also choose between a rack mount or portable topside processor or a digital link to interface to 3rd party topsides and software.

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4200 SERIES
SIDE SCAN SONAR SYSTEM

EdgeTech
An Affiliate of ORE Offshore

KEY SPECIFICATIONS

SONAR SPECIFICATIONS	STANDARD	WITH OPTIONAL MP TECHNOLOGY	
Frequency	Choice of either 100/400, 300/600 or 300/900 kHz dual simultaneous		
Operating Range (meters/side)	100 kHz: 500m, 300 kHz: 230m, 400 kHz: 150m, 600 kHz: 120m, 900 kHz: 75m		
Horizontal Beam Width:	100 kHz: 1.5°, 300 kHz: 0.5°, 400 kHz: 0.4°, 600 kHz: 0.26°, 900 kHz: 0.2°	In High Speed Mode: 100 kHz: 1.26°, 300 kHz: 0.54°, 400 kHz: 0.4°, 600 kHz: 0.34°, 900 kHz: 0.3° In High Definition Mode: 100 kHz: 0.64°, 300 kHz: 0.28°, 400 kHz: 0.3°, 600 kHz: 0.26°, 900 kHz: 0.2°	
Resolution Along Track	100 kHz: 5 m @ 200 m 300 kHz: 1.3 m @ 150 m 400 kHz: 0.6 m @ 100 m 600 kHz: 0.45 m @ 100 m 900 kHz: 18 cm @ 50 m	High Definition Mode: 100 kHz: 2.5m @ 200m 300 kHz: 1.0m @ 200m 400 kHz: 0.5m @ 100m 600 kHz: 0.45m @ 100m 900 kHz: 18 cm @ 50m	HIgh Speed Mode: 100 kHz: 4.4m @ 200m 300 kHz: 1.9m @ 200m 400 kHz: 0.7m @ 100m 600 kHz: 0.6m @ 100m 900 kHz: 26 cm @ 50m
Resolution Across Track	100 kHz: 8 cm, 300 kHz: 3 cm, 400 kHz: 2 cm, 600 kHz: 1.5 cm, 900 kHz: 1 cm		
Vertical Beam Width	50°		
Depression Angle	Tilted down 20°		
TOWFISH	**STAINLESS STEEL**	**ALUMINUM**	
Diameter	11.4 cm (4.5 inches)		
Length	125.6 cm (49.5 inches)		
Weight in Air/Saltwater	48 / 36 kg (105 / 80 pounds)	30 / 18 kg (66 / 40 pounds)	
Depth Rating (Max)	2,000m	500m	
Standard Sensors	Heading, pitch & roll		
Optional Sensor Port	(1) Serial – RS 232C, 9600 Baud, Bi-directional & 27 VDC		
Options	Pressure Sensor, Magnetometer, Integrated USBL Acoustic Tracking System, Built-in Responder Nose, Depressor, Power Loss Pinger and Custom Sensors		
TOPSIDE PROCESSOR	**4200-P**	**4200**	**701-DL INTERFACE**
Hardware	Portable splash-proof case	19” rack mount computer	19” rack mount interface
Display & Interface	Splash-proof laptop	21” flat panel monitor, keyboard & trackball	Customer-supplied
Power Input	20-36 VDC or 115/230 VAC	115/230 VAC	115/230 VAC
Operating System	Windows© XP Pro		
File Format	Native JSF or XTF		
Output	Ethernet		
TOW CABLE			
	Coaxial Kevlar or double-armored up to 6,000m, winches available		

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A SeaSPY Magnetometer System consists of:

SeaSPY Magnetometer

- ***Overhauser Sensor***
  Omnidirectional sensor that does not contain any consumable parts.
- ***Electronics Module***
  Contains all of the driving electronics and Larmour counter.
- ***Leak Detector***
  Let's you know if even a drop of water penetrates the towfish.
- ***Lead Weights***
  4 internal lead weights increase the weight of the towfish and prevent it from rotating while being towed.
  You can adjust the weight in the field by adding or removing weights.
- ***Depths Available***
  1000m (1500psi), 3000m (5000psi), 6000m (9000psi)

Tow Cable

The cable is made up of one twisted pair of conductors, a Vectran strength member, water block and yellow poly-urethane jacket. Length determined by customer.

Isolation Transceiver

Provides the complete interface between the PC and the mag. It provides two-way digital communication along the same conductors that power the mag. It also conditions the mag's power supply.
Dims: 11 x 6 x 3 cm (4 x 2 x 1") Weight: 130g (0.28 lbs)

Power Supply

Accepts any AC line 48V power, from 100-240VAC and 50/60Hz to provide conditioned and clean 24V DC power.
Dims: 11x 6 x 3.5cm (4 x 2 x 1") Weight: 165g (0.36 lbs)

Battery Clip Cable

Use this cable instead of the power supply. The mag's total power consumption is only 3W. A single 12V car battery can power it for days.

RS232 Cable

Connects the mag and PC.

BOB

Data acquisition and visualization software.

Reusable Aluminum Shipping Case

Holds all accessories listed above.

Options

- Pressure Sensor
- Altimeter
- Transponder
- Side Scan Integration
- Deck Cable
- Tow Cable Termination Kit
- FreeWheel Wireless Cable Spool

Specifications

Operating Zones	**NO RESTRICTIONS** **SeaSPY will perform exactly according to spec throughout the entire range.**
Absolute Accuracy	**0.1nT**
Sensor Sensitivity	**0.01nT**
Counter Sensitivity	**0.001nT**
Resolution	**0.001nT**
Dead Zone	**NONE**
Heading Error	**NONE**
Temperature Drift	**NONE**
Power Consumption	**1W standby, 3W maximum**
Timebase stability	**1ppm, -45°C to +60°C**
Range	**18,000nT to 120,000nT**
Gradient Tolerance	**Over 10,000nT/m**
Sampling Range	**4Hz – 0.1Hz**
External Trigger	**By RS-232**
Communications	**RS-232, 9600bps**
Power Supply	**9V-30V or 100-240 VAC**
Operating Temperature	**-45°C to +60°C**
Temperature Sensor	**-45°C to +60°C, 0.1 step**

Towfish

Towfish Length	**124 cm (49 inches)**
Towfish Diameter	**12.7 cm (5 inches)**
Towfish Weight in Air	**16kg (35 lbs)**
Towfish Weight in Water	**2kg (4.4 lbs)**

Tow Cable

Conductors	**Twisted pair**
Strength Member	**Vectran**
Breaking Strength	**2,500 kg (5,500 lbs)**
Outer Diameter	**1 cm (0.4 inches)**
Bending Diameter	**16.5 cm (6.5 inches)**
Weight in Air	**125 g/m (84 lb/1000 ft)**
Weight in Water	**44 g/m (29.5 lb/1000 ft)**
Outer Jacket	**Yellow Polyurethane**
Cable Termination	**Field Replaceable**

Floatation Cable

Conductors	**Twisted pair**
Strength Member	**Vectran**
Max Working Load	**2,500 kg (5,500 lbs)**
Outer Diameter	**1.9 cm (0.74 inches)**
Bending Diameter	**25 cm (10 inches)**
Weight in Air	**125 g/m (0.084 lbs/ft)**
Weight in Water	**-20 g/m (0.03 lbs/ft)**
Outer Jacket	**Orange Polyurethane**
Cable Termination	**Field Replaceable**

"We have now completed the first full Antarctic season using our SeaSPY magnetometer and can report that we are delighted with its performance.

It has proved to be very robust and trouble free in operation and has delivered consistently good data. There is no doubt that we chose the right instrument."

Peter Morris
British Antarctic Survey

Marine Magnetics
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KC Denmark

KC Day grab (modified Smith and MacIntyre grab)

12.300 Day Grab

12.300 Day Grab

Application:

The Day Grab is highly suitable for taking well defined samples from hard as well as soft sediments.

Weight:

The operational weight between 55 and 165 kg (exclusive the sediment sample) demands winch operation. You can mount a maximum of 22 pcs lead weights, 5 kg each. Standard delivery includes 4 pcs of weights.

General:

The main frame, grab and releaser are manufactured from AISI 316 stainless steel with an electro polished surface.

Safety:

The Day Grab is equipped with a security clip to avoid an unintended release of the grab causing injury.

Lids:

On top of the grab are mounted 4 pcs of lids, (120 x 120 mm each) so you can take out some sample without emptying the grab.

Sample volume:

Approx. 15 litres of sediment.

Sample area:

1000 cm^2

Function:
The Day Grab is lowered into the sea, and the automatic releaser is activated when the grab hits the bottom and the sample will be taken.

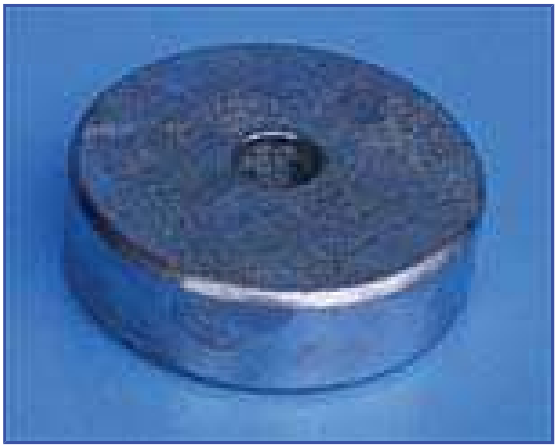
Dimensions:
70 x 70 x 70 cm.

Weight:
Exclusive lead weights: 55 kg
Standard delivery. 75 kg inclusive 4 lead weights
Maximum weight: (22 pcs of weights): 165 kg

Shipping details:
Standard delivery:
1 pc pallet 120 x 80 x 96 cm, gross weight 173 kg

Manual:
Can be found here. Right click, "save settings as" (PDF file, 401 kb).

The Day Grab has 2 identical weight stations, each side is capable of holding 7 pcs weights and an additional mounting of vertical weights. (2 x 4 pcs).



80.407 Lead weight - 5 kg

The security lock must be kept locked until the Day Grab is outside the rail of the ship

Description		Ordering No.
A complete Day grab consisting of 1 pc rack with 1 pc grab of 1000 cm² and 4 pcs lead weights, each 5 kg. Sample volume: 15 litres. Total weight of 75 kg.		12.300
Accessories		
Lead weight, 5 kg each. It is recommended to add 2 pcs at a time to keep the balance of the Day Grab. (2 diagonally placed weight stations for the weights) Maximum mounting: 22 pcs (inclusive standard delivery of 4 pcs).		80.407
Shipping weight and measurements		
L x B x H:	120 x 80 x 96 cm. Gross weight (inclusive 4 lead weights) 173 kg incl. pallet.	

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Last rev. of this page: November 2nd 2009

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ILRIS

Summary Specification Sheet

Key Features

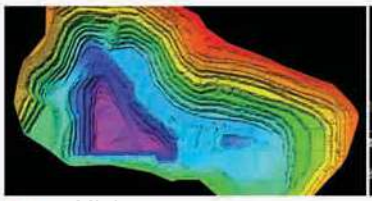
- 10 kHz repetition rate
- High precision mode
- Rapid survey method
- Extended range mode

Benefits

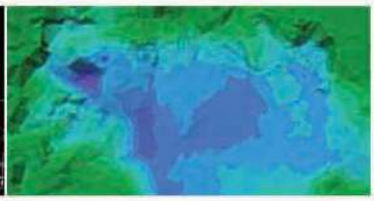
- Fast data collection
- Improved accuracy
- Reduced processing time
- Long range scanning

ILRIS

Optech's ILRIS Terrestrial Laser Scanner is a fully portable, laser-based ranging and imaging system for the commercial survey, engineering, mining and industrial markets. A compact and highly integrated instrument with digital image capture and sophisticated software tools, ILRIS is an industry-leading solution that addresses the needs of commercial users.


Mining


Civil Engineering


Geological Survey

Optech
Lidar Imaging Solutions

Alaska LNG

FUGRO

ILRIS Terrestrial Laser Scann

Instrument Type: Dual-Mirror Pulsed Time of Flight

Parameter	ILRIS-3D	ILRIS-3D-ER	ILRIS-HD	ILRIS-HD-ER	ILRIS-LR
Range 80% reflectivity	1200 m	1700 m	1250 m	1800 m	3000 m
Range 10% reflectivity	400 m	650 m	400 m	650 m	1330 m
Minimum range	3 m				
Laser repetition rate (peak and effective PRF)[1]	2500 to 3500 Hz		10,000 Hz		10,000 Hz
Efficiency (effective PRF/peak PRF)	100%				
Raw range accuracy[2, 3]	7 mm @ 100 m				
Raw range accuracy (averaged)[3, 4]	n/a		4 mm @ 100 m		4 mm @ 100 m
Raw angular accuracy	8 mm @ 100 m (80 µrad)				
Scanner Performance					
Field of view	40° x 40° (-20° through 90°, -90° through 20° with 3_6D option)				
Minimum step size[5]	0.001146° (20 µrad)		0.000745° (13 µrad)		0.001146° (20 µrad)
Maximum density (point-to-point spacing)	2 cm @ 1000 m		1.3 cm @ 1000 m		2 cm @ 1000 m
Rotational speed	0.001 to 20°/sec				
Rotational step size (minimum)	0.001146° (20 µrad)				
Beam diameter (1/e^2)	22 mm @ 100 m		19 mm @ 100 m		27 mm @ 100 m
Beam divergence	0.009740° (170 µrad)		0.008594° (150 µrad)		0.014324° (250 µrad)
Laser wavelength	1535 nm		1535 nm		1064 nm
Laser class[6, 7]	1 or 1M		1 or 1M		3
Integrated camera	3.1 MP				
Physical and Environmental					
Size (L x W x H)	320 x 320 x 220 mm		320 x 320 x 240 mm		320 x 320 x 240 mm
Weight	13 kg		14 kg		14 kg
Operating temperature	0 to +40°C				
Storage temperature	-20°C to +50°C				
Relative humidity	0 – 95% non-condensing				
Power consumption	75 W				
Battery operation (standard battery pack, hot-swappable)	5 hours operation				
Data storage	Removable USB drive				
Optional Configuration					
3_6D	Automated pan/tilt base (7 kg)				
MC	Motion compensation option: Enables GPS timestamping (from INS system)				

Standard Accessories	
Scanner control software for Windows and Window CE-based computers	Data extraction software to generate user-selectable file formats
Automated alignment software	2.0-GB USB memory drive
User manuals	Universal AC voltage power supply
Interconnect power/battery cables	Rugged carrying case
Optional Accessories	
Manual pan/tilt base	GPS/external camera mounting kit
PDA, UMPC, Notebook PCs	Batteries and chargers
Backpack	Cold-weather jacket

Data output to a variety of user-selectable formats and XYZ coordinates, including return intensity and digital photograph.
User interface: PDA, UMPC, tablet or notebook via wired/wireless connection (802.11b/g).
Digital imaging: Internal 3.1-Megapixel camera with calibration file for creating true color RBG point clouds.
Display: On-board 6.5" XVGA color LCD panel for image, system status, and data display.

1 PRF is pulse repetition frequency.
2 All ranges quoted are with ER Mode enabled.
3 All accuracies are 1 sigma, as performed under Optech test conditions. Details available on request.
4 Average of 4 shots minimum.
5 Independent fully-selectable vertical and horizontal step size selection.
6 Laser class in accordance with IEC 60825-1 and US FDA 21 CFR 1040.
7 ILRIS-LR laser Class 3 when viewing between 0-114 m. Class 1M when viewing at ranges greater than 114 m.

Optech
Lidar Imaging Solutions

APPENDIX 2-F

SOUND VELOCITY PROFILES

WATER COLUMN VELOCITY PROFILE DATA			
COOK INLET NIKISKI, ALASKA			
Date/Surface Velocity	Time		
2015-152	10:12	60:47:18	-151:15:21
1474.73			
2015-152	10:21	60:47:04	-151:15:33
1476.43			
2015-152	21:09	60:48:03	-151:16:37
1473.59			
2015-154	0:58	60:27:44	-151:31:04
1473.6			
2015-154	9:11	60:24:28	-151:32:08
1474.28			
2015-154	17:20	60:24:29	-151:32:07
1473.37			
2015-154	20:41	60:27:44	-151:30:29
1475.43			
2015-154	22:24	60:27:14	-151:30:34
1473.72			
2015-156	16:53	60:28:34	-151:28:40
1475.4			
2015-156	20:13	60:27:32	-151:31:18
1474.18			
2015-157	23:10	60:27:40	-151:31:27
1474.56			
2015-161	15:24	60:28:14	-151:32:25
1476.21			
2015-161	20:33	60:27:38	-151:32:08
1476.7			
2015-161	22:49	60:27:27	-151:32:50
1480.85			
2015-162	0:58	60:27:13	-151:32:41
1476.07			
2015-163	19:02	60:27:16	-151:33:21
1488.61			
2015-164	19:30	60:27:30	-151:31:09
1486.48			
2015-164	22:59	60:28:22	-151:30:06
1482			
2015-166	16:40	60:28:53	-151:30:04
1478.27			
2015-166	19:51	60:29:57	-151:29:06
1483.44			
2015-168	16:18	60:31:11	-151:27:29
1480.1			

2015-168	20:16	60:29:27	-151:29:50
1490.02			
2015-168	23:20	60:29:18	-151:28:30
1484.08			
2015-169	16:30	60:29:52	-151:28:42
1480.74			
2015-169	21:03	60:28:45	-151:29:31
1485.2			
2015-170	1:30	60:29:52	-151:28:42
1480.66			
2015-176	16:21	60:30:18	-151:26:18
1486.35			
2015-176	19:19	60:28:54	-151:30:04
1488.55			
2015-177	0:49	60:40:04	-151:23:56
1493.44			
2015-178	16:30	60:41:03	-151:24:34
1485.4			
2015-178	20:47	60:42:03	-151:24:55
1491.14			
2015-179	0:57	60:41:46	-151:25:15
1486.74			
2015-179	17:59	60:44:04	-151:25:44
1488.89			
2015-181	17:07	60:44:31	-151:25:42
1483.91			
2015-180	18:49	60:44:08	-151:26:25
1485.66			
2015-180	20:37	60:43:40	-151:28:47
1489.8			
2015-180	23:06	60:43:54	-151:29:16
1485.45			
2015-181	17:29	60:42:44	-151:30:19
1483.21			
2015-181	19:40	60:43:29	-151:29:40
1485.63			
2015-183	16:59	60:43:36	-151:29:57
1486.02			
2015-184	16:36	60:43:35	0:00:00
1486.95			
2015-187	16:26	60:45:02	0:00:00
1487.51			
2015-187	18:41	60:43:29	-151:28:10
1490.24			
2015-187	20:58	60:43:15	-151:29:23

1488.24			
2015-188	17:07	60:44:40	-151:26:21
1487.67			
2015-188	19:14	60:43:17	-151:28:11
1490.98			
2015-188	21:18	60:43:49	-151:27:25
1487.89			
2015-190	19:24	60:43:58	-151:28:44
1492.16			
2015-190	21:44	60:43:52	-151:29:59
1490.16			
2015-190	23:43	60:43:28	-151:27:21
1491.37			
2015-191	15:40	60:47:48	-151:14:54
1489.38			
2015-191	21:50	60:48:26	-151:15:47
1490.59			
2015-192	15:15	60:42:58	-151:27:07
1487.85			
2015-192	17:22	60:44:30	-151:26:55
1490.75			
2015-192	21:52	60:49:05	-151:15:47
1491.79			
2015-193	18:04	60:50:24	-151:15:08
1490.56			
2015-193	19:44	60:50:46	-151:14:35
1493.15			
2015-193	21:50	60:50:07	-151:14:01
1492.77			
2015-193	22:27	60:52:50	-151:05:25
1487.36			
2015-194	17:22	60:53:06	-151:04:44
1486.51			
2015-194	19:21	60:52:32	-151:05:52
1489.22			
2015-194	21:40	60:52:28	-151:05:45
1489.01			
2015-195	17:32	60:52:21	-151:06:04
1486.81			
2015-195	19:47	60:51:47	-151:06:43
1488.62			
2015-195	21:07	60:51:52	-151:06:25
1492.96			
2015-196	18:36	60:51:43	-151:07:12
1487.34			

2015-196	20:28	60:51:33	-151:06:48
1492.23			
2015-196	22:28	60:51:24	-151:06:52
1493.69			
2015-197	17:07	60:47:03	-151:15:39
1489.35			
2015-197	19:20	60:50:55	-151:07:33
1490.13			
2015-197	21:08	60:50:44	-151:07:40
1489.14			
2015-201	16:42	60:50:36	-151:07:38
1489.93			
2015-201	18:36	60:50:44	-151:07:25
1492.91			
2015-201	22:37	60:50:10	-151:08:19
1489.45			
2015-202	17:20	60:47:42	-151:14:07
1490.69			
2015-202	20:16	60:49:29	-151:08:51
1490.69			
2015-202	22:07	60:49:15	-151:09:16
1491.1			
2015-204	18:21	60:48:01	-151:10:01
1494.38			
2015-204	20:30	60:47:32	-151:10:51
1492.89			
2015-204	21:17	60:48:41	-151:09:34
1493.59			
2015-204	23:27	60:48:43	-151:09:40
1492.92			
2015-205	17:00	60:48:60	-151:08:48
1489.56			
2015-205	18:48	60:48:58	-151:09:29
1491.6			
2015-205	22:15	60:49:02	-151:09:28
1497.63			
2015-206	0:06	60:49:35	-151:08:56
1493.66			
2015-207	17:26	60:49:53	-151:09:19
1488.89			
2015-207	19:25	60:49:56	-151:08:26
1491.46			
2015-207	22:52	60:47:16	-151:10:51
1491.28			
2015-208	16:40	60:49:47	-151:16:12

1488.7			
2015-208	18:24	60:52:17	-151:12:39
1490.75			
2015-208	20:22	60:51:28	-151:13:31
1492.15			
2015-208	22:24	60:51:28	-151:13:27
1488.77			
2015-209	20:56	60:52:60	-151:04:56
1485.41			
2015-209	23:12	60:52:60	-151:04:56
1496.76			
2015-210	0:44	60:53:23	-151:04:46
1491.72			
2015-210	17:14	60:52:22	-151:07:07
1488.4			
2015-210	19:26	60:54:18	-151:04:04
1484.85			
2015-210	21:43	60:53:39	-151:04:25
1485.71			
2015-216	20:05	60:57:10	-151:02:22
1493.48			
2015-216	22:49	60:56:42	-151:02:47
1488.39			
2015-217	17:56	60:58:10	-151:00:28
1489.94			
2015-217	20:17	60:57:43	-151:02:26
1491.09			
2015-217	23:15	60:52:20	-151:12:20
1492.24			
2015-219	17:11	60:54:34	-151:08:48
1489.88			
2015-218	19:52	60:57:15	-151:06:49
1491.08			
2015-218	22:36	60:58:33	-151:01:46
1488.59			
2015-219	17:40	61:06:38	-151:02:36
1483.32			
2015-219	20:21	61:06:16	-151:02:31
1492.87			
2015-219	22:37	61:05:58	-151:02:08
1496.84			
2015-221	18:49	60:54:56	-151:09:35
1489.18			
2015-221	20:43	60:55:31	-151:08:11
1494.48			

2015-225	17:06	60:54:15	-151:10:52
1490.73			
2015-224	20:16	60:56:41	-151:07:20
1489.57			
2015-224	22:53	60:57:58	-151:05:34
1489.56			
2015-225	17:10	60:52:16	-151:06:31
1491.45			
2015-225	20:22	60:58:55	-151:01:48
1486.2			
2015-225	22:28	61:00:12	-151:00:21
1486.19			
2015-226	17:11	60:58:60	-151:02:59
1490.3			
2015-226	19:09	61:00:48	-150:59:52
1488.1			
2015-229	17:32	60:56:57	-151:06:50
1490.37			
2015-229	20:40	61:00:20	-151:00:37
1488.28			
2015-229	22:55	60:59:41	-151:01:37
1485.67			
2015-230	18:13	61:02:46	-150:57:41
1489.82			
2015-230	20:50	61:00:03	-151:01:18
1493.24			
2015-231	16:48	60:43:40	-151:28:37
1494.24			
2015-231	19:52	60:59:34	-151:04:20
1490.52			
2015-231	22:18	60:58:39	-151:05:15
1490.88			
2015-232	17:52	60:58:51	-151:04:40
1489.72			
2015-232	20:09	60:59:49	-151:04:19
1490.93			
2015-232	23:16	61:01:46	-151:01:37
1486.96			
2015-233	18:16	61:05:51	-151:01:34
1487.2			
2015-233	20:21	61:05:47	-151:01:20
1488.62			
2015-234	16:53	60:43:59	-151:28:01
1493.8			
2015-234	19:14	60:59:06	-151:04:36

1489.72			
2015-244	20:38	60:58:43	-151:05:29
1486.42			
2015-244	21:55	60:47:13	-151:15:11
1482.96			
2015-245	17:37	61:05:27	-151:01:02
1484.88			
2015-245	20:01	61:05:06	-151:01:01
1482.94			
2015-245	22:24	61:04:51	-151:00:52
1488.92			
2015-246	18:47	61:04:30	-151:00:24
1485.67			
2015-246	20:42	61:04:08	-151:00:01
1487.67			
2015-247	21:36	61:03:34	-150:59:13
1487.15			
2015-247	23:34	61:03:33	-150:59:21
1483.62			
2015-248	17:58	61:07:52	-151:04:01
1470.73			
2015-248	22:54	61:06:07	-151:05:07
1475.86			
2015-249	19:17	60:47:46	-151:10:37
1485.52			
2015-249	21:51	60:47:28	-151:10:57
1487.08			
2015-250	21:46	60:47:05	-151:15:18
1487.88			
2015-258	19:18	61:03:26	-151:01:14
1480.57			
2015-258	21:56	61:03:54	-150:59:54
1478.38			
2015-259	18:48	61:03:42	-150:59:42
1482.47			
2015-259	21:15	61:02:02	-151:01:28
1481			
2015-261	18:17	61:03:24	-150:59:04
1482.02			
2015-261	20:30	61:02:33	-151:00:05
1480.28			
2015-261	22:30	61:02:38	-150:59:33
1476.62			
2015-262	18:20	61:02:57	-150:58:39
1480.66			

2015-262	20:23	61:02:32	-150:58:45
1480.57			
2015-262	22:38	61:01:57	-150:58:43
1479.54			
2015-264	19:22	61:04:27	-150:59:11
1475.51			
2015-264	20:50	60:42:30	-151:25:02
1483.84			
2015-264	22:55	60:41:01	-151:24:11
1484.45			
2015-265	0:53	60:40:19	-151:23:50
1483.6			
2015-265	20:05	60:32:37	-151:13:39
1445.63			
2015-265	20:22	60:32:54	-151:15:48
1475.99			
2015-265	20:46	60:32:37	-151:18:11
1480.9			
2015-265	21:06	60:33:06	-151:14:50
1461.73			
2015-265	21:31	60:32:37	-151:13:34
1442.59			
2015-265	21:51	60:32:31	-151:13:59
1448.24			
2015-265	22:09	60:32:35	-151:13:52
1446.36			
2015-267	22:38	60:42:11	-151:24:41
1481.39			
2015-268	0:56	60:40:59	-151:24:03
1481.26			

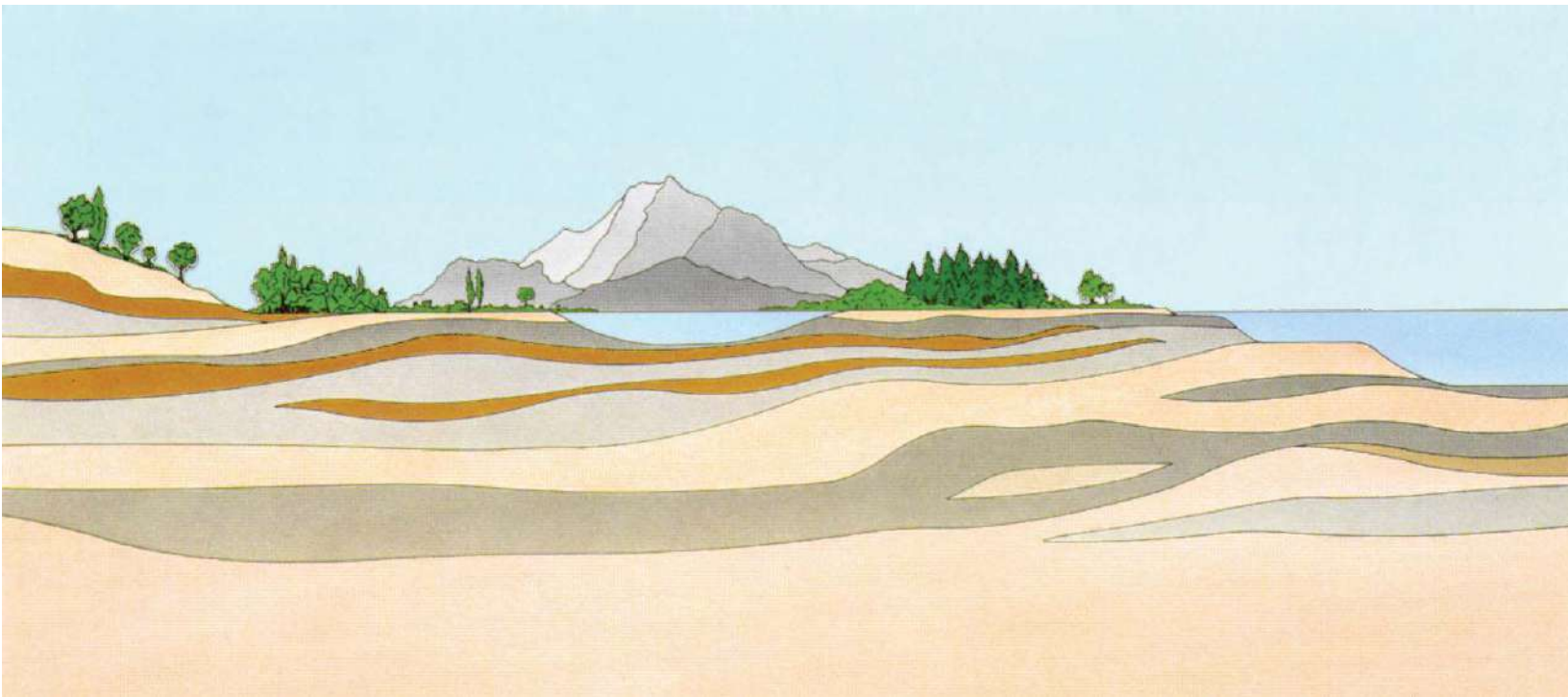
APPENDIX 2-G

WESTERLY CALIBRATION REPORT

R/V WESTERLY CALIBRATION REPORT
2015 MARINE SEAFLOOR MAPPING SURVEY

PRE-FEED LEVEL
FIELD EXPLORATION PROGRAM
ALASKA LNG PROJECT
NIKISKI, ALASKA

0	Issued as Draft	MIK	JBG		December 4, 2015
Rev	**Description**	**Prepared**	**Checked**	**Approved**	**Date**



Contents

1. SCOPE AND PURPOSE

Various quality control (QC) products are necessary to verify that each of the seafloor survey systems (MBES, side scan, and magnetometer) are preforming to meet the standards and expectations of this type of survey. This report is intended to document the procedures and results of all instrument calibrations, performance and functionality tests.

2. SURVEY INSTRUMENTATION

A suite of seabed survey instrumentation was mobilized aboard the R/V Westerly between 25 May and 30 May 2015 in Anchorage, AK. The vessel then transited to Kenai, AK where mobilization was completed. The instrumentation comprised both navigation/positioning and sea bed survey systems. These systems include:

- Positioning / Navigation – Applanix POS MV
- Side scan sonar – Edgetech 4200
- Magnetometer – SeaSPY
- Multibeam Sounder – R2Sonic 2024
- Single Beam Sounder - Edgetech Odom CV-100
- Positioning – Applanix POS/MV
- USBL - Global Acoustic Positioning System (GAPS)
- Sound Velocity Profiler – Ocean Science Underway SVP system

3. MULTIBEAM SOUNDER

A comprehensive patch test was first carried out on 1 June 2015 to calibrate the different components of the multibeam bathymetry system in accordance with manufacturer & industry standards. This calibration procedure measures the angular mounting components of the correction sensors (roll, pitch, and yaw) as errors in these measurements can lead to an inaccurate survey data. The calibration test is a data collection and processing procedure to calibrate these angles along with position system latency.

Date of Data Acquisition	Purpose	CARIS Results			
		Latency	Pitch (Degrees)	Roll (Degrees)	Yaw (Degrees)
June 1, 2015	Initial post-mobilization calibration	0.00	-0.50	0.40	-0.25
July 11, 2015	Refined post-mobilization calibration	0.00	-0.50	0.40	-0.25
July 15, 2015	The multibeam head had to be removed to replace a failed deck lead jumper cable.	0.00	0.10	0.27	0.00
Sept. 1, 2015	Power cycle issues with the POS MV resulted in installing the spare POS topside and IMU.	0.00	0.00	0.15	-0.10

3.1 PATCH TEST.

The patch test is performed when a new installation of an inertial measurement unit (IMU) and/or multibeam transducer is carried out, or if either are moved. The patch test involves collecting data over certain types of bottom terrain, and processing of the data using MB-Max or Caris software. Four elements of the patch test are a positioning latency test, a pitch test, a roll test and a yaw test. The patch test involves two steps: the measurement of all relative sensor offsets which is carried out at time of sensor installation and a field sensor alignment.

Survey lines in water depths ranging from 12 to 20 meters were run in the vicinity of Boulder Point for the patch test and are shown in figure 3-1 below.

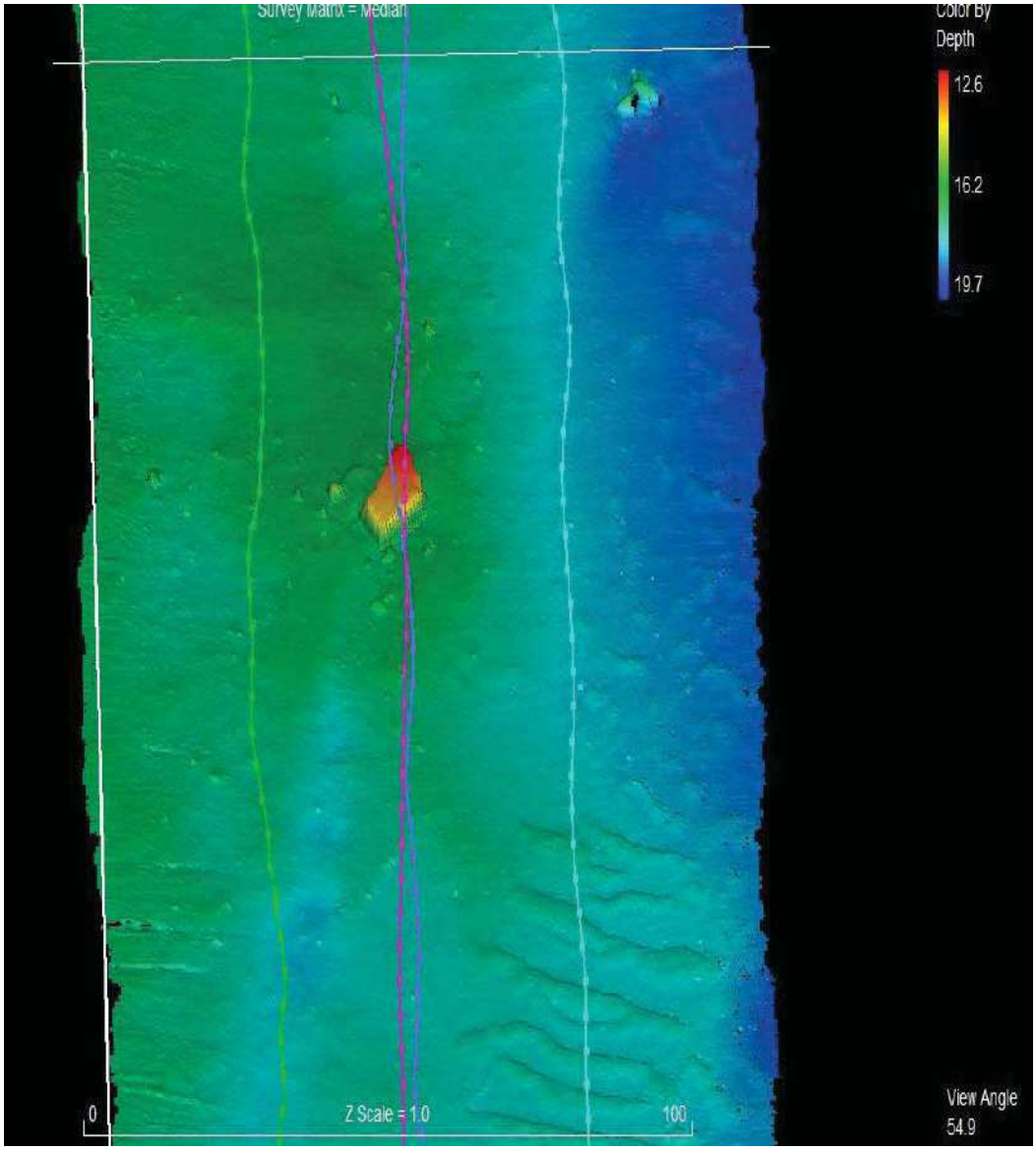


Figure 3-1.Survey lines run for the Patch Test.

3.1.1 Position Latency

The Latency calibration is typically carried out over a steep slope or feature on the seafloor. A survey line is created perpendicular (Figure 3-2) to the slope and run at least two times in the same direction. The first line surveyed at survey speed and then surveyed again in the same direction but at half the survey speed. No latency was found in the system and these results are shown in figure 3-3.

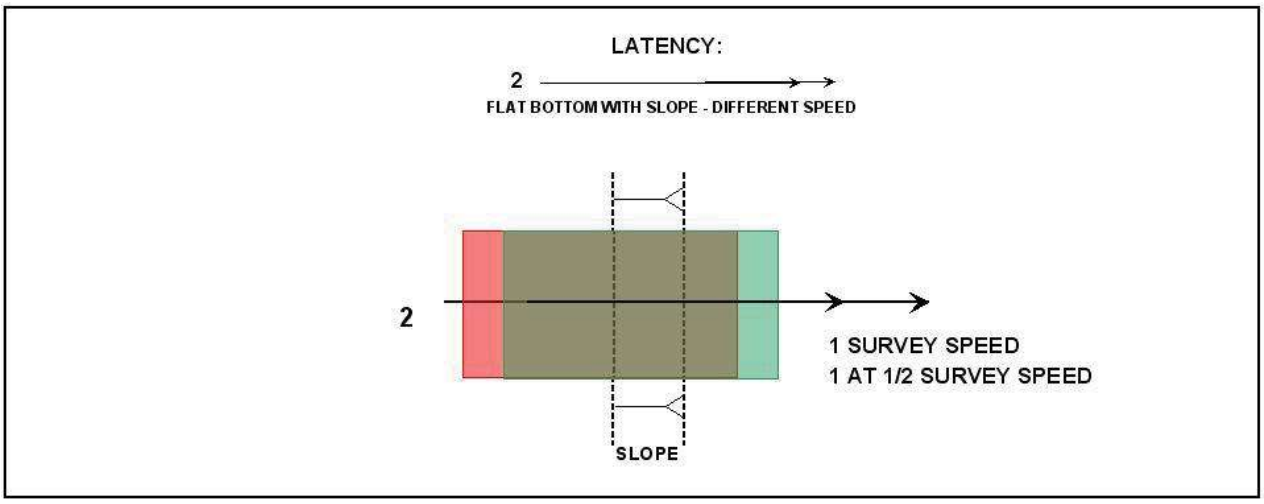


Figure 3-2 Survey line layout for the latency test.

Figure 3-3. September 1, 2015 example: zero latency was determined.

3.1.2 Pitch Test

The pitch calibration is typically carried out over a steep slope or feature on the seafloor. A survey line is created perpendicular to the slope and run four times in a reciprocal direction and at a typical survey speed taking care to pass over the same exact part of the slope. Having four survey datasets will provide at least three pitch misalignment values where the average of the three will be the final value.

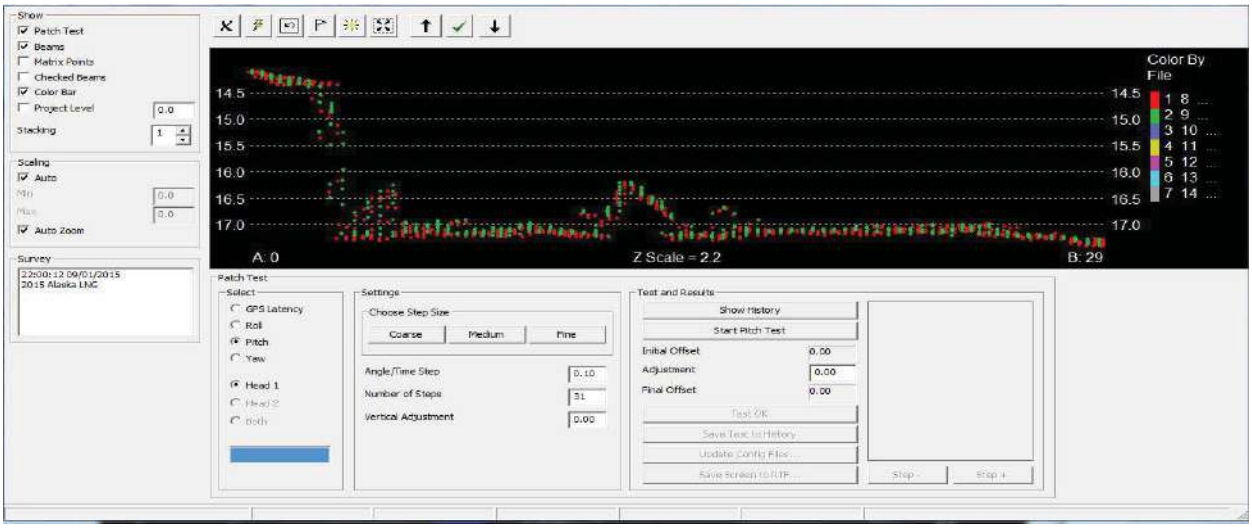


Figure 3-4. September 1, 2015 example: pre pitch with no bias.

Figure 3-5. September 1, 2015 example: post pitch remains at no bias.

3.1.3 Roll Test

The roll calibration is typically carried out over a flat bottom area. A survey line is created over this terrain and run four times in a reciprocal direction and at typical survey speed. The length of survey line should be around 200m. Having four survey datasets will provide at least three roll misalignment values where the average of the three will be the final value.

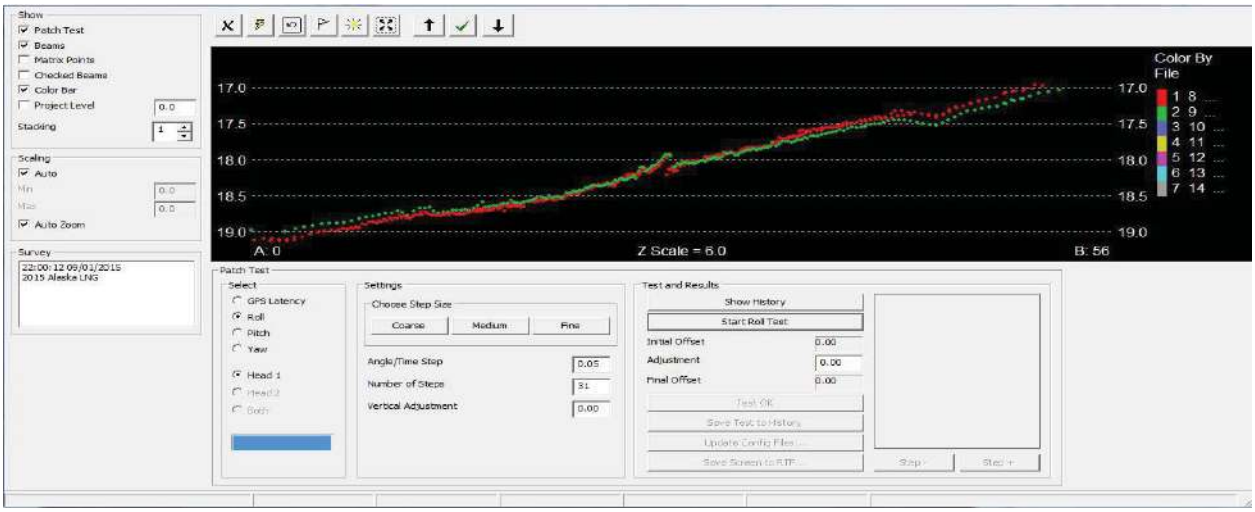


Figure 3-6. September 1, 2015 example: pre-roll with no bias.

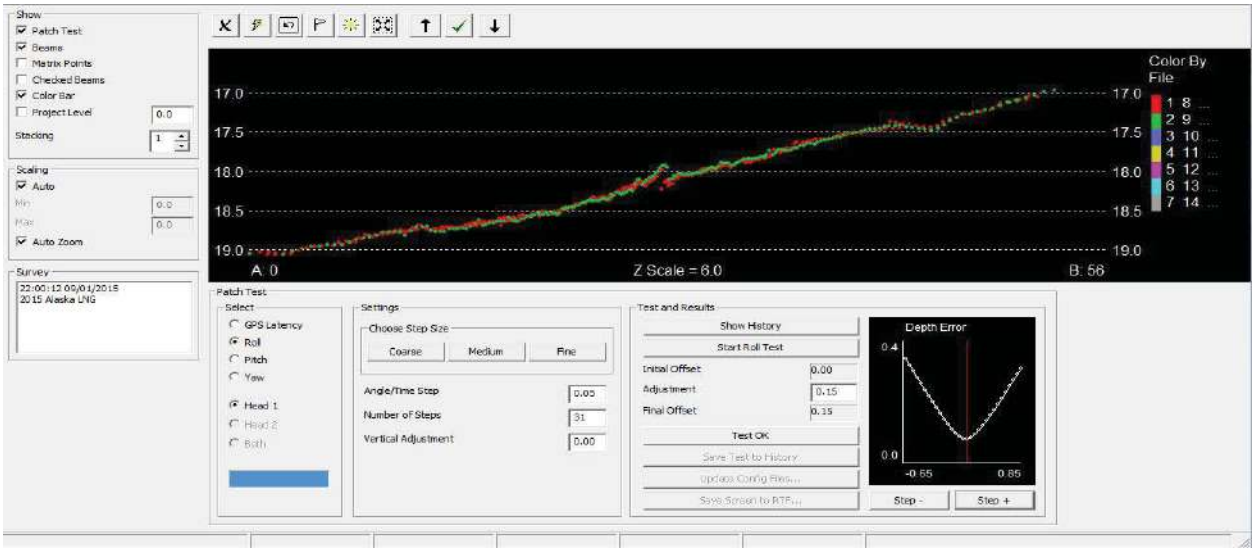


Figure 3-7. September 1, 2015 example: post roll showing a roll bias of 0.15 applied.

3.1.4 Yaw Test

The yaw calibration is typically carried out over a steep slope or feature on the seafloor. Two parallel survey lines are created perpendicular to the slope and run three times in the same direction and at typical survey speed taking care to pass over the same exact part of the slope. Having three survey datasets will provide three yaw misalignment values where the average of the three will be the final value.

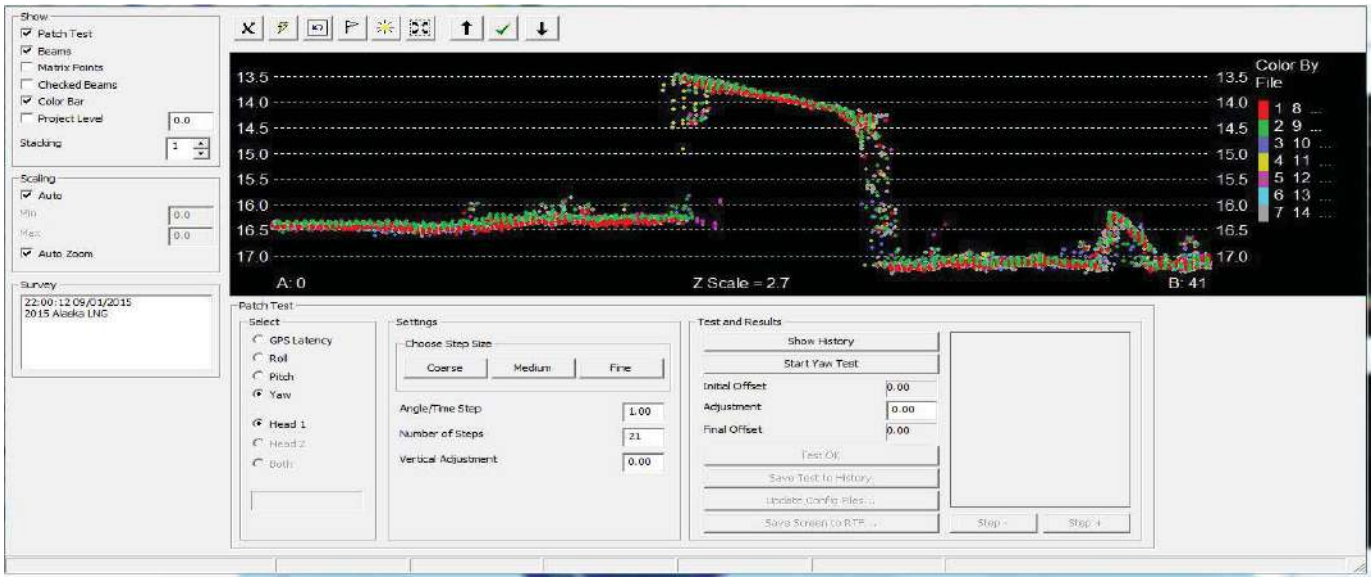


Figure 3-8. September 1, 2015 example: pre-yaw with no bias

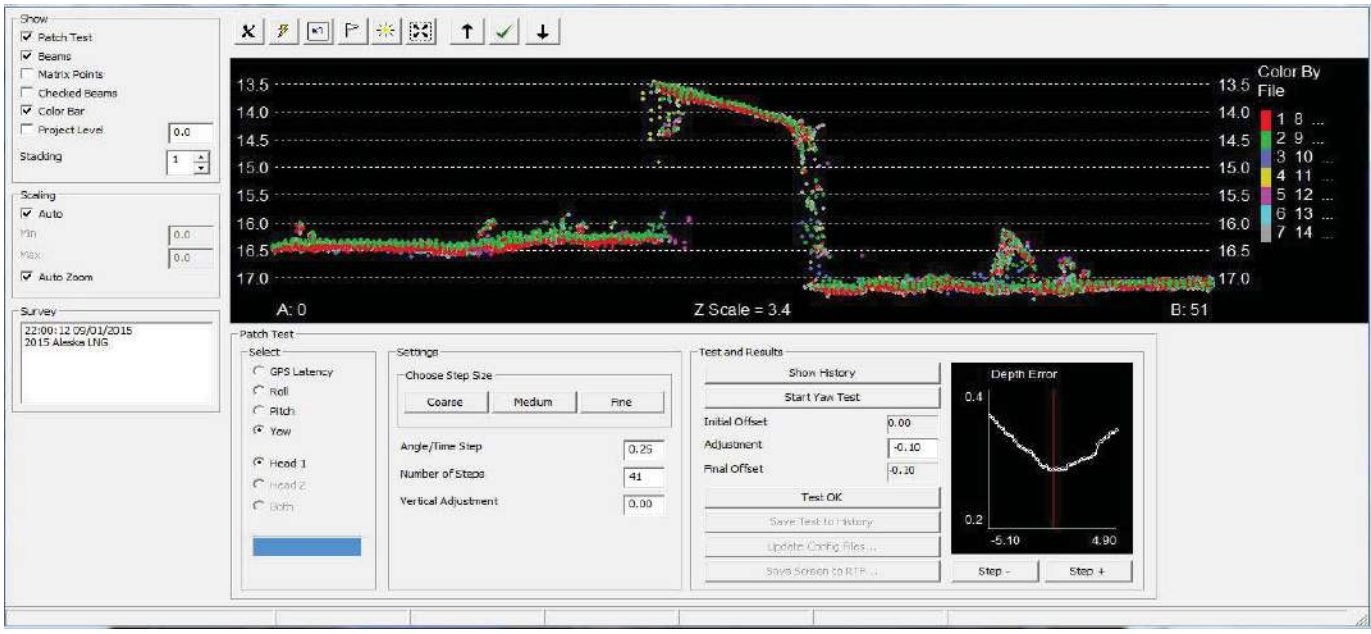


Figure 3-9. September 1, 2015 example: post yaw showing a roll bias of -0.10 applied.

3.2 PERFORMANCE TEST.

A performance test was carried out to evaluate the quality and confidence of the multibeam data being collected. Two sets of seven parallel lines perpendicular to each other are surveyed utilizing a 90° swath to create a reference surface, and two perpendicular lines (check lines) using full swath (160°) are surveyed through the center of the reference area. Running the beam angle test, the check lines are compared to the reference surface and estimates of depth accuracy of the multibeam system at different angle limits are obtained (Figure 3-10). The resultant accuracy is used to determine the swath to utilize for data acquisition in order to meet survey specifications. From the results obtained by performing a multi-beam survey using a POS/MV inertial navigation system and an R2Sonics sonar head, we can meet IHO order 1A standards by limiting our survey swath to 65º.

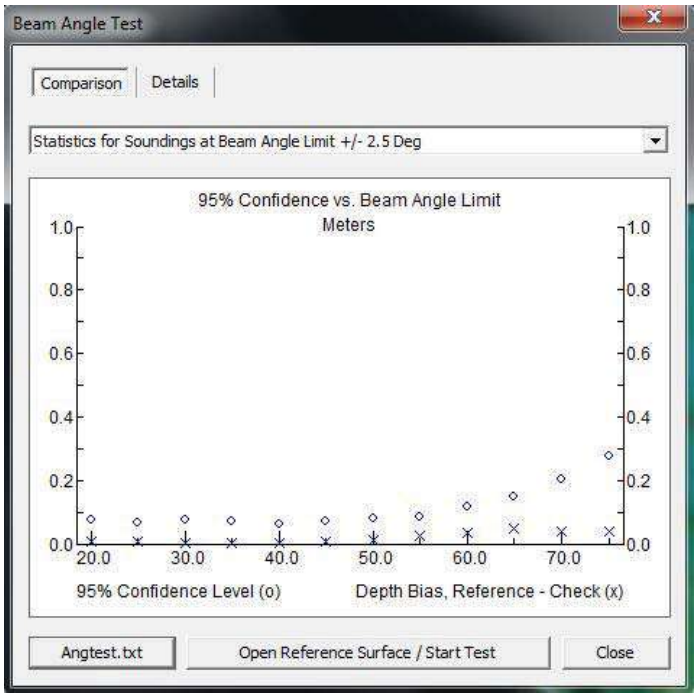


Figure 3-10 Beam Angle Test plot.

+/- Beam Angle Limit	Max Outlier	Mean Diff	Std Dev	95% Confidence	
20	0.77	-0.01	0.04	0.07	*
25	0.31	-0.01	0.03	0.07	*
30	0.33	-0.00	0.04	0.07	*
35	0.48	0.00	0.04	0.07	*
40	0.37	0.00	0.03	0.06	*
45	0.50	0.01	0.04	0.07	*
50	0.25	0.01	0.04	0.08	*
55	0.29	0.02	0.04	0.09	*
60	0.36	0.04	0.06	0.12	**
65	0.45	0.05	0.08	0.15	**
70	0.33	0.04	0.10	0.20	***
75	0.40	0.04	0.14	0.28	***

Table 3-1. Beam Angle Test Comparison Table.

3.3 POSITIONING AND DEPTH QC TEST

An isolated large prominent seabed feature located near Boulder Point (Figure 3-12) at 60° 47.289'N - 151° 15.038'W was used in a confirmation check for comparison between 2014 data with 2015 data (Figure 3-13).

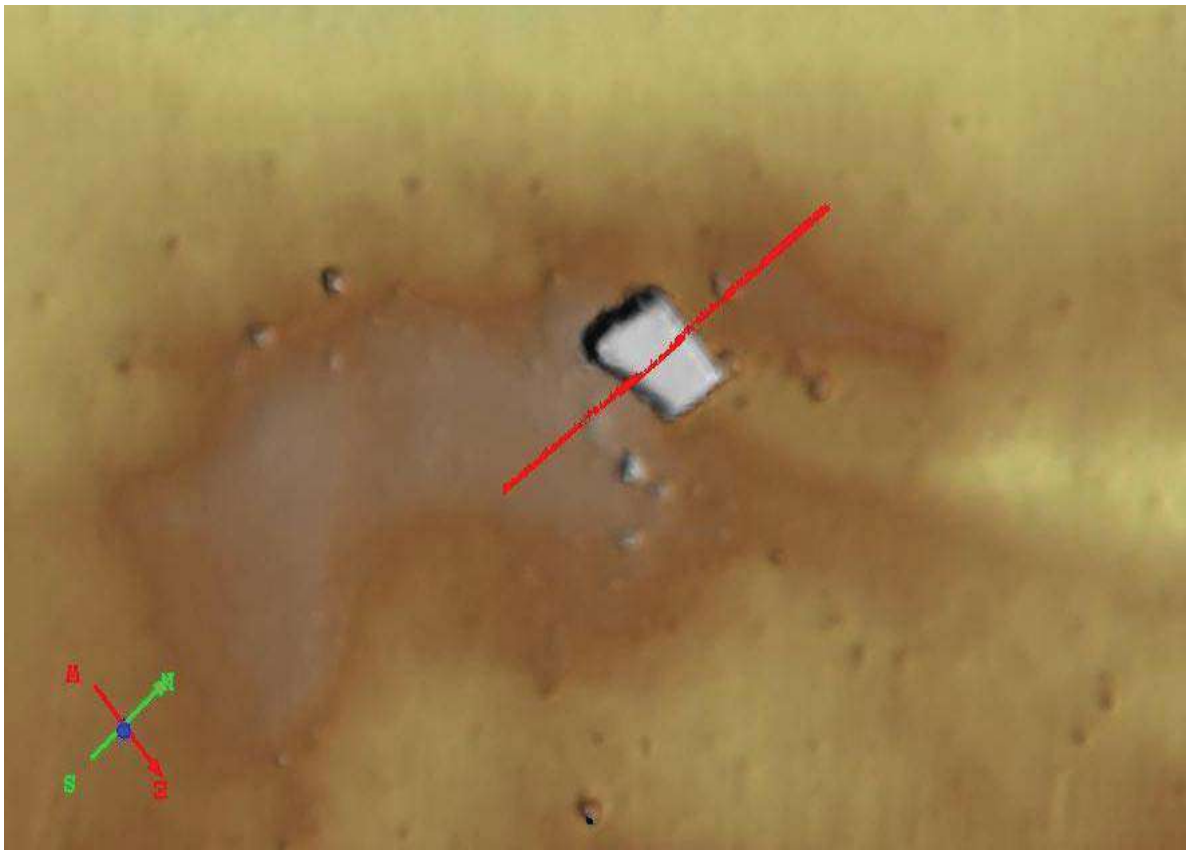


Figure 3-12. Isolated sea bed feature in the Boulder Point area.

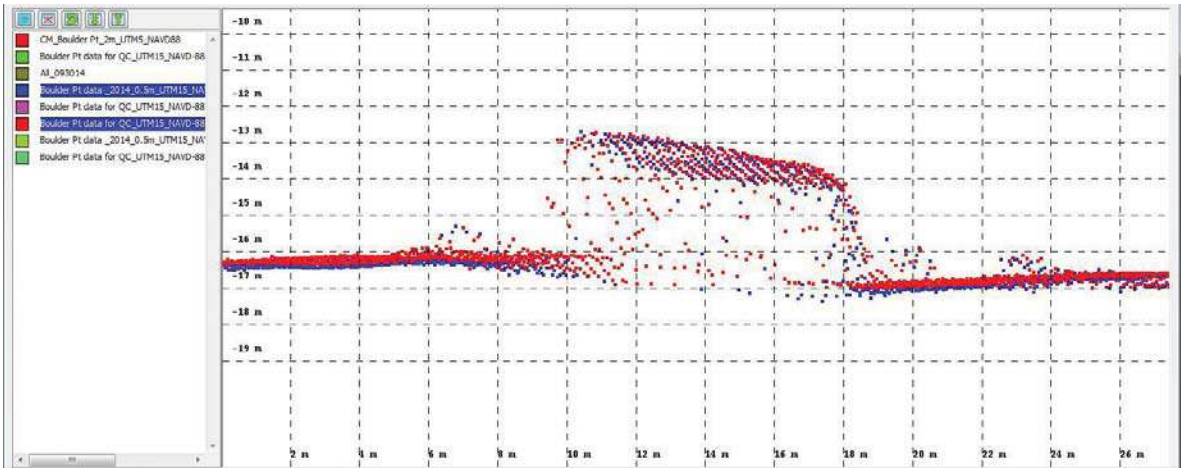


Figure 3-13. Cross section comparison of 2014 data (blue) and 2015 data (red).

3.4 DELAYED HEAVE.

The vertical position of the antenna can be monitored with respect to the ellipsoid. The high pass filtered version of this signal represents the heave at the antenna (Figure 3-14). This signal, or delayed heave, was logged in a POS MV digital file and applied during data processing. Heave measurements are averaged over five minutes, and when applied to the data in post-processing (Figure 3-15), solves for any real time heave inaccuracies.

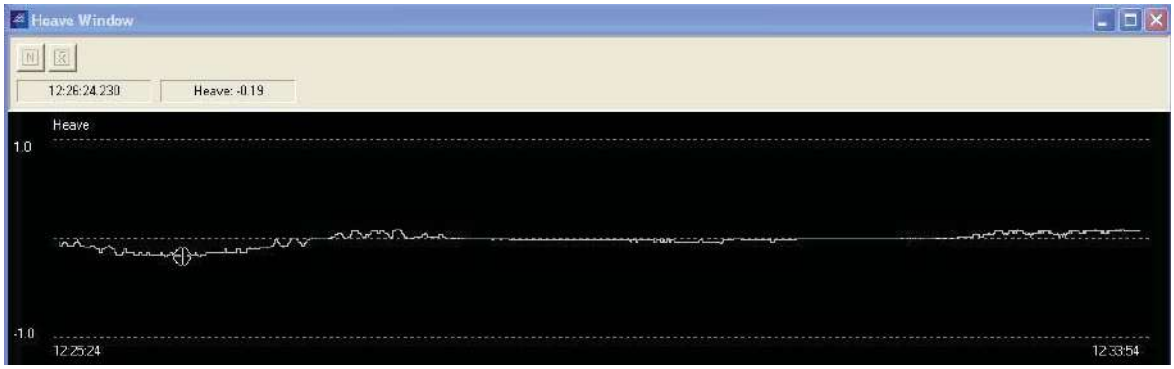


Figure 3-14. Real-time heave.

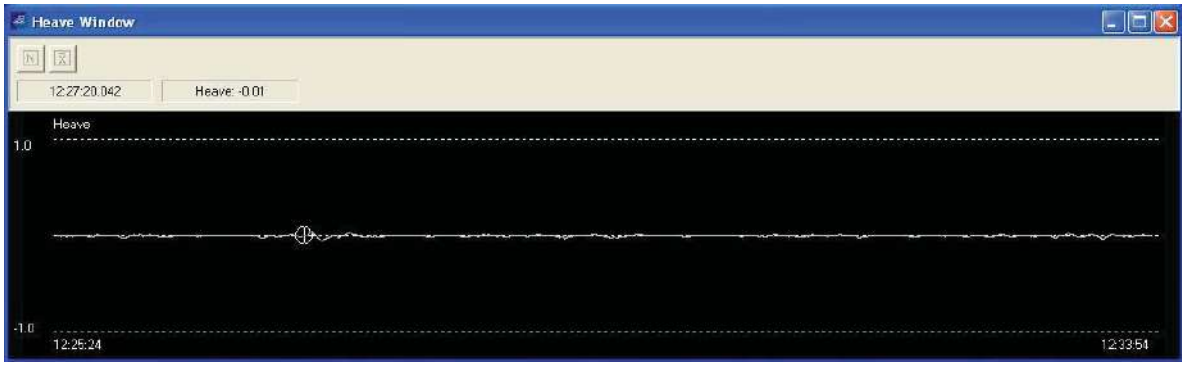


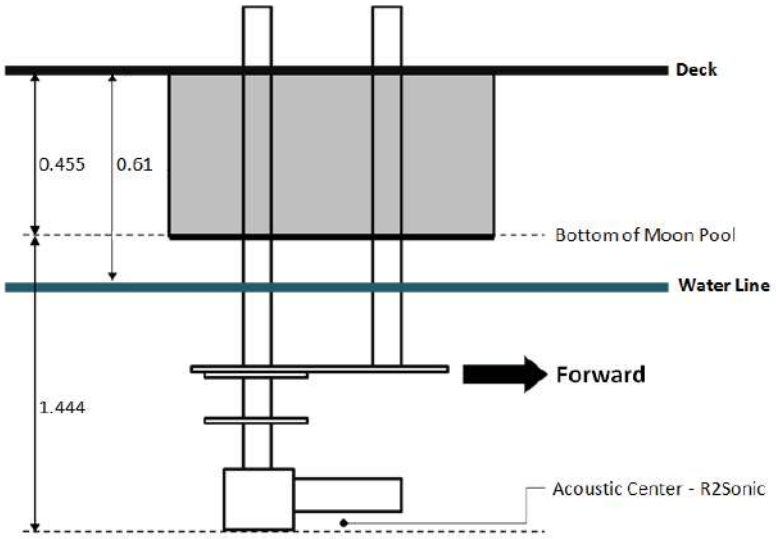
Figure 3-15. Delayed heave applied.

3.5 LEAD LINE CALIBRATION

On June 4, 2015, a lead line calibration of the R2Sonic 2024 multibeam echosounder was conducted at the floating dock while the R/V Westerly was moored. The calibration involved recording the multibeam soundings during the test and taking a physical lead line reading to the water line on the port and starboard sides of the vessel amidships. The average value of both sets of soundings was then used to determine the draft with respect to the acoustic center of the multibeam array and the accuracy of the recorded soundings of the multibeam.

All measurements for the draft of the multibeam were taken to the nearest millimeter (mm) or 1/10 inch and are referenced to the water line of the vessel (as averaged from the draft marks on port/starboard amidships). The lead line test was conducted with a cloth tape with a 10 lb weight secured to the end. The

tape is calibrated such that the 3 foot mark on the tape corresponds to a 1 foot depth measurement including the weight. (all measurements taken with this apparatus must be adjusted by -2 feet to account for this).



Draft with respect to Acoustic Center R2Sonic

D_{R2S} = (1.444 m + 0.455 m) – 0.61m

D_{R2S} = 1.289 m

Recorded soundings and average value

Start of test: 4.62 m With D_{R2S}: 5.909 m

End of test: 4.56 m With D_{R2S}: 5.849 m

Average depth including D_{R2S}: 5.879 m

Difference between $Avg_{R2Sonic}$ and $Avg_{Lead\ Line}$

5.879 m - 5.865 m = 0.014 m

Lead Line

Starboard: 21'2" – 2' = 19'2"

(19*0.304) + (2*0.0254)

= 5.776 m + 0.0508 m

= 5.8268m

Port: 21.5"-2=19.5"

= 5.903 m

Average depth for lead line: 5.8649 m

Based on the calculated difference of 0.014 m, it has been determined that the soundings recorded using the R2Sonic 2024 multibeam during the lead line test are consistent, accurate and within acceptable variances for the purposes of this project.

4. SIDE SCAN SONAR SYSTEM

A confidence check of the Edgetech 4200 side scan sonar system was conducted at the start of the survey. The check was comprised a visual review of the sonar imagery at the outer limits of the range scales being used. Observed sonar targets along these outer edges of the record confirmed that the system was adequately portraying both smaller subtle and larger more obvious targets (Figure 4-1). Each sonar channel (i.e., port and starboard) were checked to verify proper system tuning and operation.

Functionality checks were periodically performed prior to towfish deployment. This check procedure is completed with the sonar towfish on deck and the system powered up. A manual rub of the port and starboard transducers produces dark streaks across the record for each of the appropriate channels. An auditory check of the towfish transducers confirms that the system is transmitting.

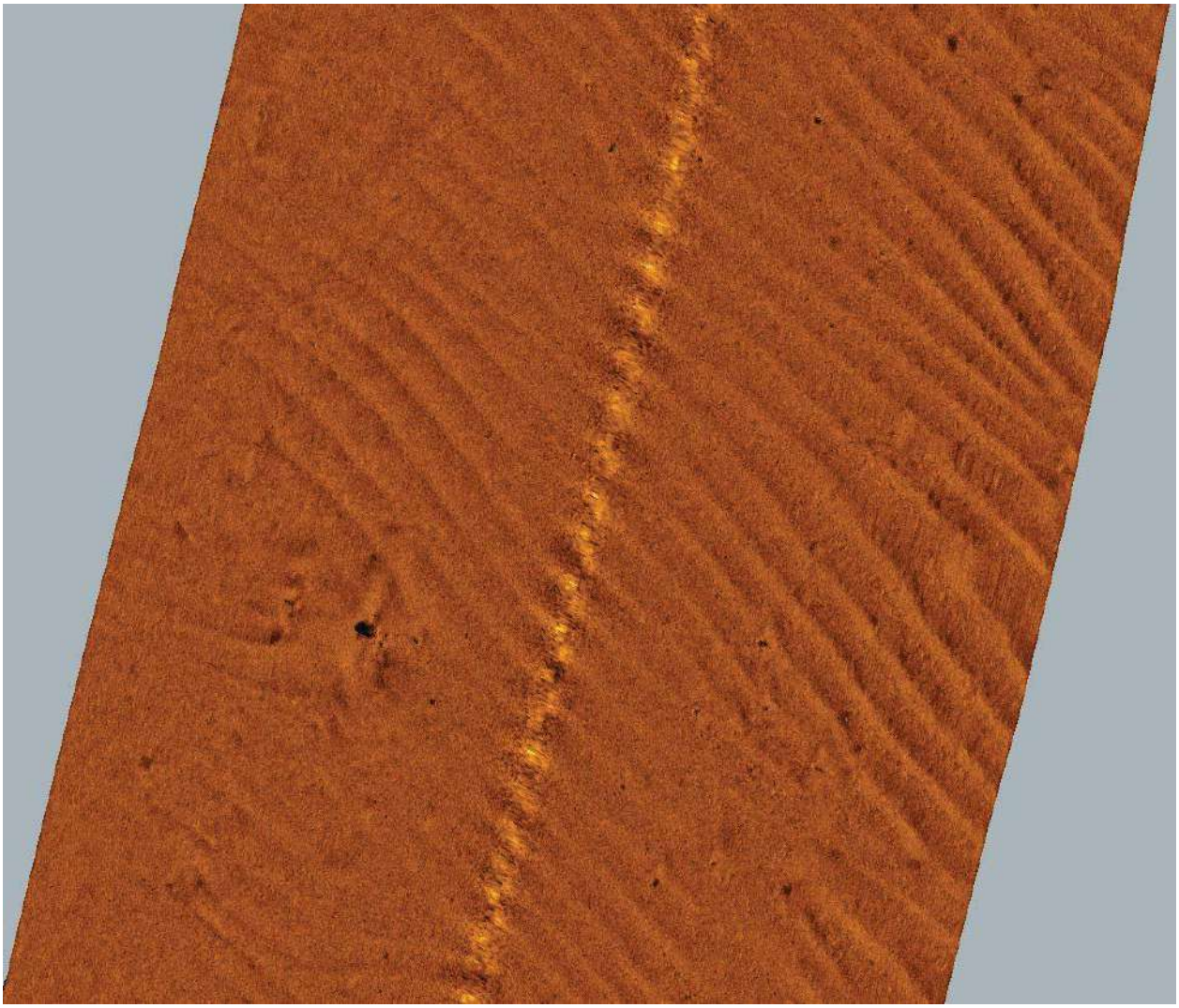


Figure 4-1. Large sand waves and smaller ripple marks are seen across the entire swath.

5. MAGNETOMETER

A functionality test was completed as a Quality Control/Quality Assurance measure for the magnetometer system. A survey line was run normal to the Cook Inlet Gas Gathering (CIGG) pipeline bundle at survey speed. The crossing produced a significant magnetic signature typical of a pipeline bundle as seen in figure 5-1 below. The recorded magnetic anomaly plotted directly over the known location of the pipeline bundle.

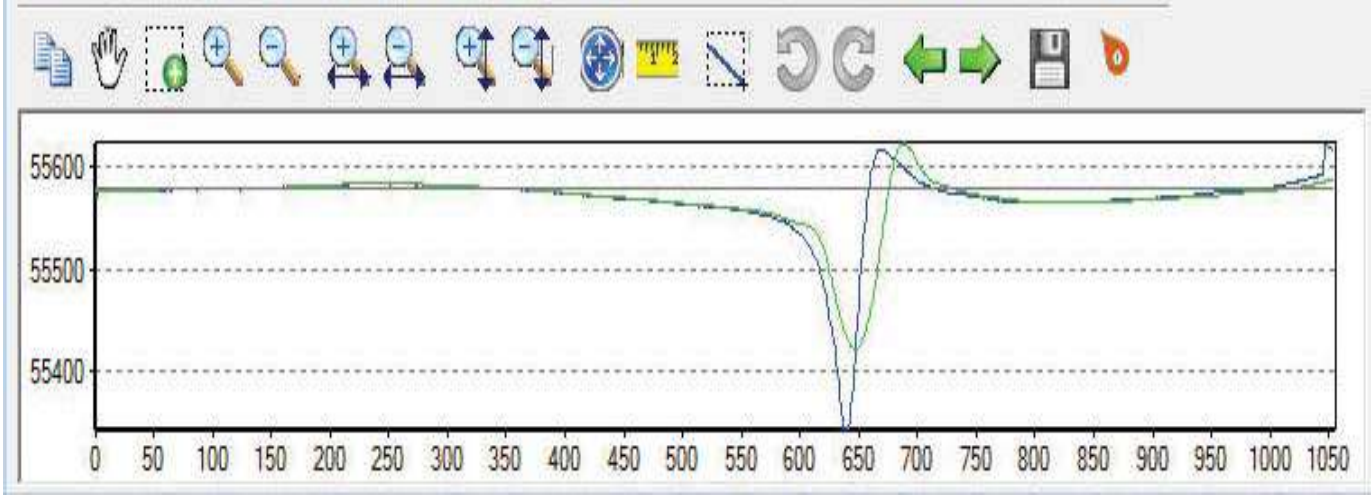


Figure 5-1. Magnetic anomaly record over the Cook Inlet Gas Gathering bundle.

6. LIDAR / LASER SCANNER CALIBRATION

In order to parse scan data with precision, the parser needs to know where ILRIS 3D sensors are located and how they are oriented in relation to the IMU (Figure 6-1 and 6-2). Such relative position and orientation information is known as lever arm measurements (X, Y, and Z) (Table 6-1) and bore sight angle measurements (roll, pitch, and heading) (Table 6-2). Prior to data acquisition, lever arm and bore sight angle measurement with respect to the IMU was done in order to geo-reference the scanned data. The lever arm measurements are the distances (X, Y, and Z) from the ILRIS reference point to the IMU (Table 8-7). The bore sight angle measurement was determined by a calibration performed in static mode to accurately determine the roll, pitch, and heading offsets in relation to the IMU.

The scanner and IMU are mounted on a single platform that was temporarily mounted on the Westerly then subsequently temporarily mounted to the Utility Task Vehicle (UTV). Due to the utilization of this common plate, the offsets between the scanner and the scanner's IMU are identical for each acquisition vehicle.

ILRIS LiDAR Scanner System was mobilized onboard R/V Westerly on July 30, 2015, data acquisition at Tyonek was carried out on July 31, 2105 during low tide period (1200-1500). Data acquisition for Boulder Point area was achieved by mounting the ILRIS LiDAR scanner onboard a Utility Task Vehicle on September 09, data acquisition took place on September 10-12, 2015.

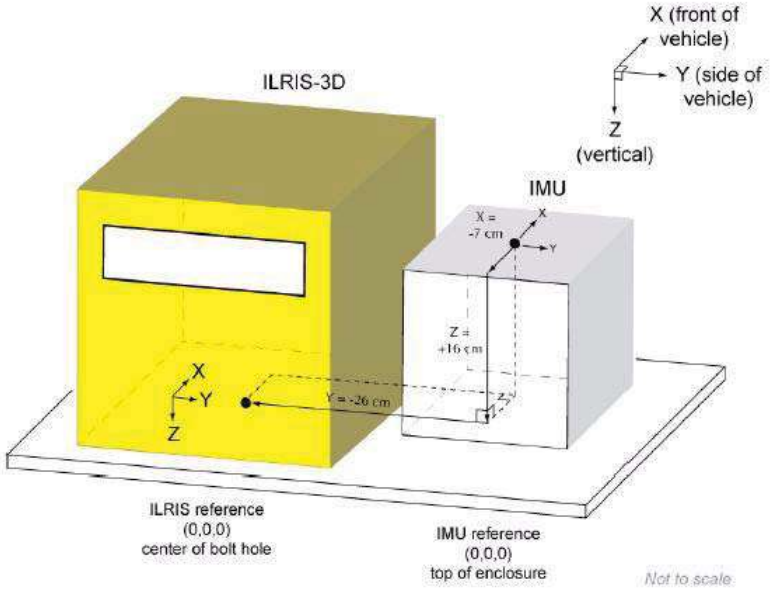


Figure 6-1 ILRIS Lever Arm Measurements

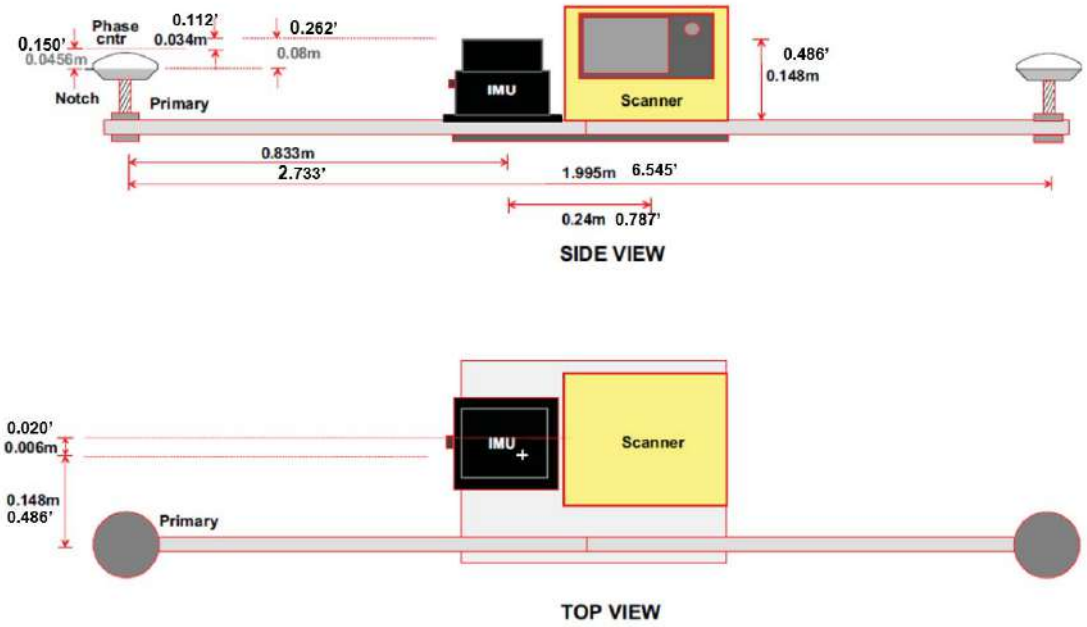


Figure 6-2 ILRIS Lever Arm Offsets.

Offsets	X	Y	Z
IMU Frame Reference frame	0	0	0
Reference to Primary GPS Lever Arm (ft.)	2.733	-0.486	-0.112
Reference to Primary GPS Lever Arm (m)	0.840	-0.140	-0.014

Table 6-1 POS MV Lever Arms

Offsets	Roll	Pitch	Heading
Reference to IMU	0	0	0
ILRIS lever arm	-0.423°	-0.10°	-90.85°

Table 6-2 ILRIS Lever Arms

Figure 6-3. LiDAR laser scanner mounted on a UTV (left) and on the R/V Westerly (right).

7. VESSEL OFFSETS

The R/V Westerly, a 15m catamaran, was employed as the survey platform for the seafloor mapping campaign. The Westerly was equipped with a surface positioning system, side scan sonar, a magnetometer, multibeam and single beam sounders, a grab sampler and an underway sound velocimeter to accomplish the survey objectives.

The relevant vessel offsets for the R/V Westerly were accurately measured and recorded on a vessel offset diagram (Figure 7-1) with all offsets relative to the Inertial Measurement Unit (IMU). All measurements were verified by two personnel. If any changes are made to the offsets, these changes will be noted on a new diagram along with a date and time of the change.

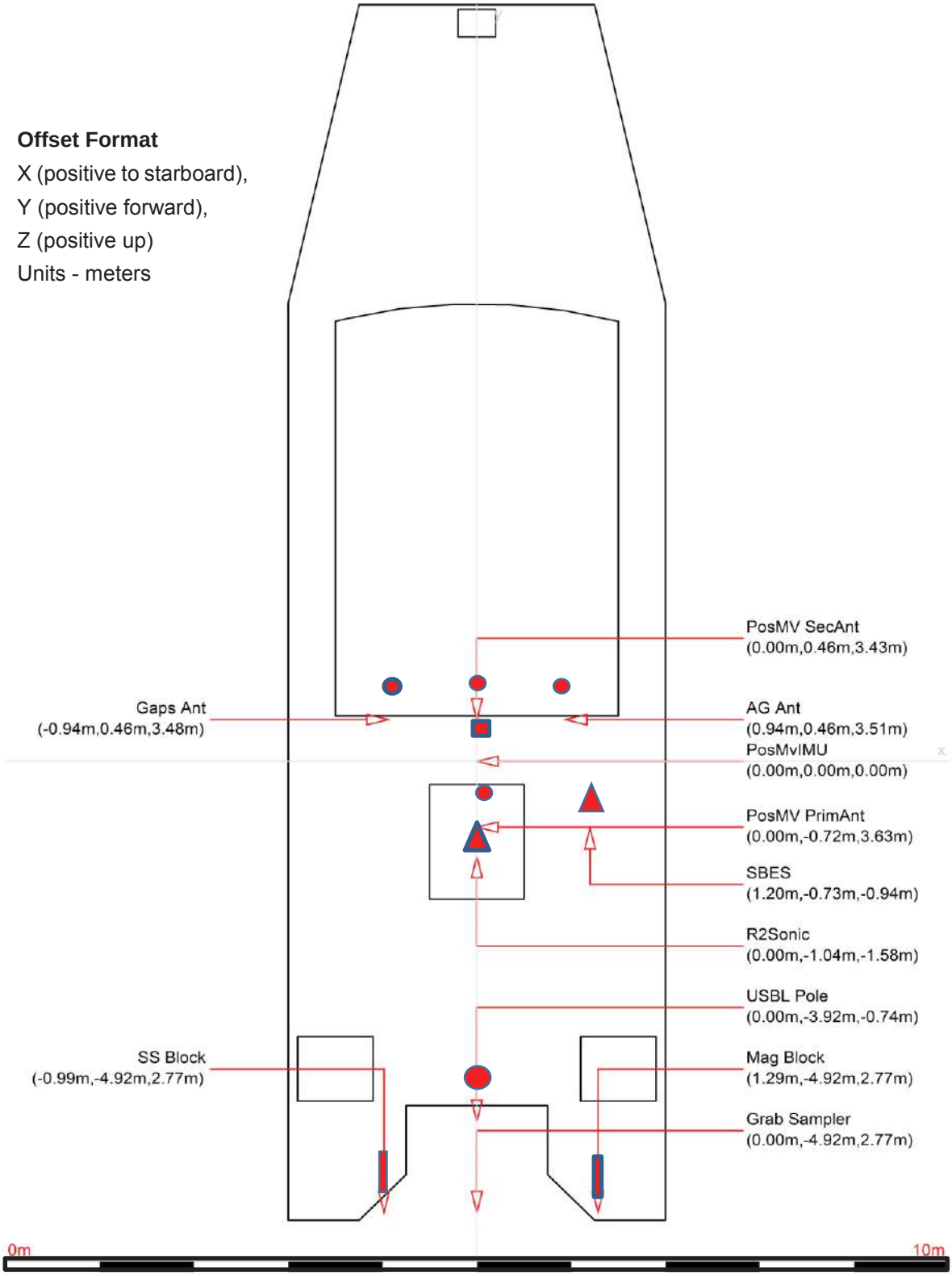


Figure 7-1. R/V Westerly Offset Diagram.

APPENDIX G

CHARTS