Seq# 001

Line Name: MGL1903MC01
Line Brg : 155.449 °

NAVIGATION LINE LOGS

DATE: 2019-06-08
JULIAN DAY: 159

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	257.3 m	DEPTH SOL :	81.0 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	329.0 m	DEPTH EOL :	5298.0 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.0 kts	FEATHER SOL:	-62.4 °	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	4.8 kts	FEATHER EOL:	-04.1 ° °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	-62.4 °	GRAVITY METER:	BMG-II: used, SN213
WIND SOL:	S 13 kts			MAGNETOMETER:	GeoMetrics: used
WIND EOL:	NE 17 kts				
SEAS SOL:	0.5 m				
SEAS EOL:	1.5 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
990	20:21	SOL	Start of line - 400m shot spacing
			Intermittent streamer bird data SOL-SP1018
1072	0:01	Midnight	First shot of the day 6-9-19
1393	15:01	EOL	Line Complete

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	990	57° 13' 20.724"	152° 05' 03.175"
LSP	1393	55° 54' 03.469"	151° 00' 48.287"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Good	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 002

Line Name: MGL1903MT01
Line Brg : 205.38 °

NAVIGATION LINE LOGS

DATE: 2019-06-09
JULIAN DAY: 160

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	4.0 m	DEPTH SOL :	5244.0 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	294.1 m	DEPTH EOL :	3964.8 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.2 kts	FEATHER SOL:	40.3 °	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	4.7 kts	FEATHER EOL:	02.1 ° °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	40.3 °	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	NE 18.7 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	NE 23 kts				
SEAS SOL:	1.5 m				
SEAS EOL:	1.5 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
2004	15:08	SOL	Start of line - 400m shot spacing
2200	0:01	Midnight	First shot of the day 6-10-19
2251	2:13	EOL	Line Complete

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	2004	55° 53' 28.916"	151° 01' 08.599"
LSP	2251	55° 05' 19.706"	151° 41' 10.267"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Good	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 003

Line Name: MGL1903MC02
Line Brg : 335.657 °

NAVIGATION LINE LOGS

DATE: 2019-06-10
JULIAN DAY: 161

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	-29.4 m	DEPTH SOL :	4027.5 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	-794.6 m	DEPTH EOL :	145.5 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	4.5 kts	FEATHER SOL:	34.3 °	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.5 kts	FEATHER EOL:	02.4 ° °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	34.3 °	GRAVITY METER:	BMG-II: used, SN213
WIND SOL:	NE 24.2 kts			MAGNETOMETER:	GeoMetrics: used
WIND EOL:	NE 31 kts				
SEAS SOL:	1.5 m				
SEAS EOL:	2.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
3020	3:04	SOL	Start of line - 400m shot spacing
3493	0:00	Midnight	11June2019
3496	0:08	EOL	Line Complete

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	3020	55° 06' 22.285"	151° 46' 10.620"
LSP	3496	56° 39' 15.300"	153° 03' 45.160"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Good	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 004

Line Name: MGL1903MT02
Line Brg : 245.318 °

NAVIGATION LINE LOGS

DATE: 2019-06-11
JULIAN DAY: 162

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	16.2 m	DEPTH SOL :	158.3 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	-649.1 m	DEPTH EOL :	128.5 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.7 kts	FEATHER SOL:	-45.6 °	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.2 kts	FEATHER EOL:	05.6 ° °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	-45.6 °	GRAVITY METER:	BMG-II: used, SN213
WIND SOL:	NE 33.1 kts			MAGNETOMETER:	GeoMetrics: used
WIND EOL:	NE 28.3 kts				
SEAS SOL:	2.0 m				
SEAS EOL:	1.5 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
4009	0:24	SOL	Start of line - 400m shot spacing
4073	2:51	EOL	Line Complete

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	4009	56° 38' 59.313"	153° 06' 22.480"
LSP	4073	56° 32' 51.565"	153° 28' 47.281"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Good	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 005

Line Name: MGL1903MC03
Line Brg : 176.524 °

NAVIGATION LINE LOGS

DATE: 2019-06-11
JULIAN DAY: 162

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	21.5 m	DEPTH SOL :	126.2 m
DC EOL :	976.0 m	DEPTH EOL :	3109.7 m
BSP SOL:	4.5 kts	FEATHER SOL:	-54.3 °
BSP EOL:	6.1 kts	FEATHER EOL:	-11.0 °
WEATHER		MAX FEATHER:	-54.3 °
WIND SOL:	NE 28.9 kts		
WIND EOL:	N 12.5 kts		
SEAS SOL:	1.5 m		
SEAS EOL:	1.5 m		

NAVIGATION SYSTEM USED: C-Nav3050 - Primary
NAVIGATION SYSTEM USED: SeaPath 200
NAVIGATION SYSTEM USED: C-Nav2000
NAVIGATION SYSTEM USED: POSMV
GRAVITY METER: BMG-II: used, SN213
MAGNETOMETER: GeoMetrics: used

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
5004	2:56	SOL	Start of line - 400m shot spacing
5027	3:58	Source	secured arrays 3 and 4, volume 3300 cubic inches, to recover PAM cable due to tangle
5059	5:40	Source	Array 4 redeployed, volume 4950 cubic inches
5071	6:20	Source	Array 3 redeployed, volume 6600 cubic inches
5502	23:13	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	5004	56° 32' 24.695"	153° 28' 58.693"
LSP	5502	54° 54' 29.535"	152° 12' 56.751"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 006

Line Name: MGL1903MT03
Line Brg : 245.255 °

NAVIGATION LINE LOGS

DATE: 2019-06-11
JULIAN DAY: 162

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	-36.0 m	DEPTH SOL :	2967.8 m
DC EOL :	696.1 m	DEPTH EOL :	4229.2 m
BSP SOL:	5.3 kts	FEATHER SOL:	59.5 °
BSP EOL:	5.3 kts	FEATHER EOL:	-07.9 ° °
WEATHER		MAX FEATHER:	59.5 °
WIND SOL:	N 12.4 kts		
WIND EOL:	N 14.7 kts		
SEAS SOL:	1.5 m		
SEAS EOL:	1.0 m		

NAVIGATION SYSTEM USED: C-Nav3050 - Primary
NAVIGATION SYSTEM USED: SeaPath 200
NAVIGATION SYSTEM USED: C-Nav2000
NAVIGATION SYSTEM USED: POSMV
GRAVITY METER: BMG-II: used, SN213
MAGNETOMETER: GeoMetrics: used

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
6006	23:21	SOL	Start of line - 400m shot spacing
6022	0:00	Midnight	First shot of the day 12 June
6084	2:34	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	6006	54° 53' 58.078"	152° 13' 48.956"
LSP	6084	54° 47' 13.881"	152° 40' 31.450"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 007

Line Name: MGL1903MC04
Line Brg : 334.8 °

NAVIGATION LINE LOGS

DATE: 2019-06-12
JULIAN DAY: 163

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	-4.2 m	DEPTH SOL :	4121.4 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	-964.4 m	DEPTH EOL :	116.8 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.2 kts	FEATHER SOL:	49.3 °	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.3 kts	FEATHER EOL:	06.1 ° °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	49.3 °	GRAVITY METER:	BMG-II: used, SN213
WIND SOL:	N 13.7 kts			MAGNETOMETER:	GeoMetrics: used
WIND EOL:	E 8.0 kts				
SEAS SOL:	1.0 m				
SEAS EOL:	0.5 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
7008	2:50	SOL	Start of line - 400m shot spacing
7474	21:09	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	7008	54° 48' 11.818"	152° 42' 00.327"
LSP	7474	56° 18' 28.884"	153° 59' 48.731"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 008

Line Name: MGL1903MT04
Line Brg : 246.949 °

NAVIGATION LINE LOGS

DATE: 2019-06-12
JULIAN DAY: 163

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	-1.1 m	DEPTH SOL :	123.6 m
DC EOL :	-732.1 m	DEPTH EOL :	91.4 m
BSP SOL:	5.5 kts	FEATHER SOL:	-52.4 °
BSP EOL:	5.2 kts	FEATHER EOL:	07.8 °
WEATHER		MAX FEATHER:	-52.4 °
WIND SOL:	E 5.2 kts		
WIND EOL:	SE 6.4 kts		
SEAS SOL:	0.5 m		
SEAS EOL:	0.5 m		

NAVIGATION SYSTEM USED: C-Nav3050 - Primary
NAVIGATION SYSTEM USED: SeaPath 200
NAVIGATION SYSTEM USED: C-Nav2000
NAVIGATION SYSTEM USED: POSMV
GRAVITY METER: BMG-II: used, SN213
MAGNETOMETER: GeoMetrics: used

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
8008	21:23	SOL	Start of line - 400m shot spacing
8079	0:01	Midnight	First shot of the day 13 June 2019
8084	0:14	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	8008	56° 18' 15.747"	154° 01' 50.603"
LSP	8084	56° 11' 25.661"	154° 28' 30.657"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 009

Line Name: MGL1903MC05
Line Brg : 153.327 °

NAVIGATION LINE LOGS

DATE: 2019-06-13
JULIAN DAY: 164

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	11.3 m	DEPTH SOL :	87.6 m
DC EOL :	754.4 m	DEPTH EOL :	4358.2 m
BSP SOL:	4.9 kts	FEATHER SOL:	-39.7 °
BSP EOL:	4.8 kts	FEATHER EOL:	-08.8 °
WEATHER		MAX FEATHER:	-39.7 °
WIND SOL:	SE 6.5 kts		
WIND EOL:	SE 16.6 kts		
SEAS SOL:	0.5 m		
SEAS EOL:	0.5 m		

NAVIGATION SYSTEM USED: C-Nav3050 - Primary
NAVIGATION SYSTEM USED: SeaPath 200
NAVIGATION SYSTEM USED: C-Nav2000
NAVIGATION SYSTEM USED: POSMV
GRAVITY METER: BMG-II: used, SN213
MAGNETOMETER: GeoMetrics: used

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
9009	0:32	SOL	Start of line - 400m shot spacing
9104	4:35	Avoidance	Diverting course to starboard to avoid fishing gear
9125	5:27	Avoidance	Fishing gear avoided, turning back towards line
9477	20:08	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	9009	56° 09' 57.234"	154° 28' 09.037"
LSP	9477	54° 39' 11.260"	153° 10' 42.598"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 010

Line Name: MGL1903MT05
Line Brg : 243.797 °

NAVIGATION LINE LOGS

DATE: 2019-06-13
JULIAN DAY: 164

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	17.7 m	DEPTH SOL :	4336.2 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	696.5 m	DEPTH EOL :	4322.2 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.3 kts	FEATHER SOL:	50.3 °	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.9 kts	FEATHER EOL:	01.0 ° °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	50.3 °	GRAVITY METER:	BMG-II: used, SN213
WIND SOL:	SE 17.9 kts			MAGNETOMETER:	GeoMetrics: used
WIND EOL:	SE 19.6 kts				
SEAS SOL:	0.5 m				
SEAS EOL:	0.5 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
10008	20:24	SOL	Start of line - 400m shot spacing
10084	23:32	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	10008	54° 38' 19.067"	153° 12' 20.156"
LSP	10084	54° 31' 21.422"	153° 37' 52.810"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 011

Line Name: MGL1903MC06
Line Brg : 334.068 °

NAVIGATION LINE LOGS

DATE: 2019-06-13
JULIAN DAY: 164

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	-45.9 m	DEPTH SOL :	4274.5 m
DC EOL :	-616.3 m	DEPTH EOL :	239.6 m
BSP SOL:	5.9 kts	FEATHER SOL:	58.4 °
BSP EOL:	5.3 kts	FEATHER EOL:	08.0 °
WEATHER		MAX FEATHER:	58.4 °
WIND SOL:	SE 22.6 kts		
WIND EOL:	E 20.5 kts		
SEAS SOL:	0.5 m		
SEAS EOL:	2.0 m		

NAVIGATION SYSTEM USED: C-Nav3050 - Primary
NAVIGATION SYSTEM USED: SeaPath 200
NAVIGATION SYSTEM USED: C-Nav2000
NAVIGATION SYSTEM USED: POSMV
GRAVITY METER: BMG-II: used, SN213
MAGNETOMETER: GeoMetrics: used

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
11008	23:46	SOL	Start of line - 400m shot spacing
11015	0:01	Midnight	First shot of the day 14 June 19
11658	0:01	Midnight	First shot of the day 15 June 19
11686	1:12	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	11008	54° 32' 17.730"	153° 39' 28.894"
LSP	11686	56° 42' 41.103"	155° 36' 14.273"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 012

Line Name: MGL1903MT06
Line Brg : 242.43 °

NAVIGATION LINE LOGS

DATE: 2019-06-15
JULIAN DAY: 166

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	34.2 m	DEPTH SOL :	244.1 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	-391.5 m	DEPTH EOL :	281.7 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.4 kts	FEATHER SOL:	-57.0 °	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	4.8 kts	FEATHER EOL:	-05.5 ° °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	-57.0 °	GRAVITY METER:	BMG-II: used, SN213
WIND SOL:	E 20.5 kts			MAGNETOMETER:	GeoMetrics: used
WIND EOL:	Se 18.0 kts				
SEAS SOL:	2.0 m				
SEAS EOL:	2.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
12007	1:25	SOL	Start of line - 400m shot spacing
12083	4:42	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	12007	56° 42' 36.173"	155° 38' 22.996"
LSP	12083	56° 34' 45.856"	156° 04' 29.639"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 013

Line Name: MGL1903MC07
Line Brg : 152.044 °

NAVIGATION LINE LOGS

DATE: 2019-06-15
JULIAN DAY: 166

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CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	4.5 m	DEPTH SOL :	276.3 m
DC EOL :	7.2 m	DEPTH EOL :	4579.9 m
BSP SOL:	6.5 kts	FEATHER SOL:	-48.0 °
BSP EOL:	5.2 kts	FEATHER EOL:	-00.9 °
WEATHER		MAX FEATHER:	-48.0 °
WIND SOL:	SE 19.2 kts		
WIND EOL:	E 17.7 kts		
SEAS SOL:	2.0 m		
SEAS EOL:	1.0 m		

NAVIGATION SYSTEM USED: C-Nav3050 - Primary
NAVIGATION SYSTEM USED: SeaPath 200
NAVIGATION SYSTEM USED: C-Nav2000
NAVIGATION SYSTEM USED: POSMV
GRAVITY METER: BMG-II: used, SN213
MAGNETOMETER: GeoMetrics: used

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
13009	5:03	SOL	Start of line - 400m shot spacing
	10:00	Maneuvering	turning to remain out of sea otter zone
	12:08	Maneuvering	clear of sea otter zone, turning back to line
	12:31	Maneuvering	rejoined original line
13516	0:00	Midnight	First shot of the day 16 June 2019
13689	7:03	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	13009	56° 33' 01.875"	156° 04' 05.092"
LSP	13689	54° 22' 32.871"	154° 06' 27.237"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	421.70m
COS – CNG	191.70m
NRP – CMP	325.90m

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	Intermittent	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 014

Line Name: MGL1903OT07
Line Brg : 243.699 °

NAVIGATION LINE LOGS

DATE: 2019-06-16
JULIAN DAY: 167

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	-237.0 m	DEPTH SOL :	4576.4 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	688.4 m	DEPTH EOL :	4724.3 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	4.8 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.6 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	E 15.5 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	NE 12.7 kts				
SEAS SOL:	2.0 m				
SEAS EOL:	1.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
13998	17:07	SOL	Start of line - 400m shot spacing (Source Only)
14084	20:37	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	13998	54° 22' 50.917"	154° 05' 45.018"
LSP	14084	54° 15' 24.647"	154° 35' 30.109"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 015

Line Name: MGL1903OB08
Line Brg : 333.294 °

NAVIGATION LINE LOGS

DATE: 2019-06-16
JULIAN DAY: 167

Lamont-Doherty Earth Observatory
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CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	66.5 m	DEPTH SOL :	4729.9 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	-390.8 m	DEPTH EOL :	197.9 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.2 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.4 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	NE 13.1 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	NW 10 kts				
SEAS SOL:	1.0 m				
SEAS EOL:	1.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
15005	20:45	SOL	Start of line - 400m shot spacing (Source Only)
15087	0:01	Midnight	First shot of the day 17 June 2019
15272	7:22	Last shot	Last shot before shutdown
None	7:24	MMO	Shutdown for sighting
	7:45	Source	Ramp up
	8:05	Source	Ramp up complete
15291	8:13	First shot	First good shot at full volume
15530	18:19	Source	Autofires started - string 2 gun 10
15533	18:27	Source	spare out string 2, volume 4950 27 guns
	19:18	Source	string 2 on board
15623	21:59	Source	Firing full volume, 6600 cubic inches 36 guns
15674	00:00	Midnight	First shot of the day 18 June 2019
15685	00:27	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	15005	54° 15' 24.647"	154° 35' 30.109"
LSP	15685	56° 25' 18.163"	156° 34' 46.452"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 016

Line Name: MGL1903OT08
Line Brg : 181.022 °

NAVIGATION LINE LOGS

DATE: 2019-06-18
JULIAN DAY: 169

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CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	4448.7 m	DEPTH SOL :	163.3 m
DC EOL :	-193.0 m	DEPTH EOL :	223.1 m
BSP SOL:	5.0 kts	FEATHER SOL:	N/A
BSP EOL:	5.1 kts	FEATHER EOL:	N/A °
WEATHER		MAX FEATHER:	N/A
WIND SOL:	W 7.0 kts		
WIND EOL:	NW 14.4 kts		
SEAS SOL:	1.0 m		
SEAS EOL:	0.5 m		

NAVIGATION SYSTEM USED: C-Nav3050 - Primary
NAVIGATION SYSTEM USED: SeaPath 200
NAVIGATION SYSTEM USED: C-Nav2000
NAVIGATION SYSTEM USED: POSMV
GRAVITY METER: BMG-II: used, SN213
MAGNETOMETER: GeoMetrics: used

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
16010	1:05	SOL	Start of line - 400m shot spacing (Source Only)
16175	7:48	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	16010	56° 23' 57.037"	156° 39' 22.934"
LSP	16175	55° 48' 20.854"	156° 36' 00.026"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 017

Line Name: MGL1903OB09
Line Brg : 151.253 °

NAVIGATION LINE LOGS

DATE: 2019-06-18
JULIAN DAY: 169

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CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	226.9 m	DEPTH SOL :	226.9 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	649.0 m	DEPTH EOL :	4650.4 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.0 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.1 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	NW 14.4 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	W 17.6 kts				
SEAS SOL:	0.5 m				
SEAS EOL:	1.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
17154	7:51	SOL	Start of line - 400m shot spacing (Source Only)
17545	0:00	Midnight	19 June 2019
17685	5:40	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	17154	55° 48' 05.810"	156° 35' 49.780"
LSP	17685	54° 06' 35.365"	155° 03' 49.551"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 018

Line Name: MGL1903OT09
Line Brg : 242.272 °

NAVIGATION LINE LOGS

DATE: 2019-06-19
JULIAN DAY: 170

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CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	439.1 m	DEPTH SOL :	4651.6 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	758.0 m	DEPTH EOL :	4607.8 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.1 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.3 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	W 17.6 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	W 18 kts				
SEAS SOL:	1.0 m				
SEAS EOL:	1.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
18003	5:44	SOL	Start of line - 400m shot spacing (Source Only)
18084	9:05	EOL	

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	18003	54° 06' 19.883"	155° 03' 59.821"
LSP	18084	53° 58' 18.325"	155° 30' 21.209"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 019

Line Name: MGL1903OB10
Line Brg : 332.5 °

NAVIGATION LINE LOGS

DATE: 2019-06-19
JULIAN DAY: 170

Lamont-Doherty Earth Observatory
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CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	260.2 m	DEPTH SOL :	4620.6 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	-728.0 m	DEPTH EOL :	120.0 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.3 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.2 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	W 18 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	E 12 kts				
SEAS SOL:	1.0 m				
SEAS EOL:	0.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
19004	9:09	SOL	Start of line - 400m shot spacing (Source Only)
19369	0:00	Midnight	First shot of the day 20 June 19
19462	4:12	Last good	Last good shot before whale shutdown
	4:14	MMO	Source shutdown for whale sighting
	4:53	Source	Begin soft start
	5:13	Source	soft start complete
19481	5:14	First good	First good shot
19686	13:35	EOL	End of line

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	19004	53° 58' 30.235"	155° 31' 01.055"
LSP	19686	56° 07' 43.311"	157° 33' 15.716"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 020

Line Name: MGL1903OT10
Line Brg : 187.5 °

NAVIGATION LINE LOGS

DATE: 2019-06-20
JULIAN DAY: 171

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CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	-246.3 m	DEPTH SOL :	115.6 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	-216.0 m	DEPTH EOL :	97.5 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.3 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.0 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	E 12 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	NE 14.3 kts				
SEAS SOL:	0.0 m				
SEAS EOL:	0.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
20004	13:40	SOL	Start of line - 400m shot spacing (Source Only)
20103	17:32	EOL	End of line

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	20004	56° 07' 46.083"	157° 34' 04.867"
LSP	20103	55° 52' 12.204"	157° 54' 29.626"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 021

Line Name: MGL1903OB11
Line Brg : 144.1 °

NAVIGATION LINE LOGS

DATE: 2019-06-20
JULIAN DAY: 171

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	10.5 m	DEPTH SOL :	98.3 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	732.6 m	DEPTH EOL :	4088.4 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	4.8 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	4.8 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER:	BMG-II: used, SN213
WIND SOL:	NE 14.2 kts			MAGNETOMETER:	GeoMetrics: used
WIND EOL:	NW 21.9 kts				
SEAS SOL:	0.0 m				
SEAS EOL:	2.0 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
21002	17:34	SOL	Start of line - 400m shot spacing (Source Only)
21152	0:00	Midnight	First shot of the day 21 June 19
21315	6:53	LGSP	Last good shot before shutdown for PSO sighting
	07:10	Ramp up	Begin ramp up of source
	07:30	Ramp up	Ramp up complete
21331	07:32	FGSP	First good shot point
21332	8:07	LGSP	Shutdown source for PAM entanglement
	14:42	Ramp up	Begin ramp up of source
	15:02	Ramp up	Ramp up complete
21472	15:06	FGSP	First good shot point after ramp up
21649	22:35	EOL	End of line

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	21002	55° 52' 00.418"	157° 54' 22.891"
LSP	21649	53° 49' 22.357"	155° 59' 08.749"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 022

Line Name: MGL1903OT11
Line Brg : 242.210 °

NAVIGATION LINE LOGS

DATE: 2019-06-21
JULIAN DAY: 172

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	-16.2 m	DEPTH SOL :	4004.1 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	724.4 m	DEPTH EOL :	4720.9 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	4.5 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.5 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	NW 24.2 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	NW 12.4 kts				
SEAS SOL:	2.0 m				
SEAS EOL:	1.5 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
22008	22:53	SOL	Start of line - 400m shot spacing (Source Only)
22035	0:02	Midnight	22 June 2019, First shot of the day
22084	02:04	EOL	End of line

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	22008	53° 48' 27.091"	156° 00' 41.262"
LSP	22084	53° 41' 06.753"	156° 25' 25.104"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete

Seq# 023

Line Name: MGL1903OB12
Line Brg : 331.807 °

NAVIGATION LINE LOGS

DATE: 2019-06-22
JULIAN DAY: 173

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

CLIENT: NSF - Abers/Becel
SURVEY: AACSE Kodiak

DC SOL :	229.5 m	DEPTH SOL :	4715.8 m	NAVIGATION SYSTEM USED:	C-Nav3050 - Primary
DC EOL :	-3.0 m	DEPTH EOL :	125.7 m	NAVIGATION SYSTEM USED:	SeaPath 200
BSP SOL:	5.3 kts	FEATHER SOL:	N/A	NAVIGATION SYSTEM USED:	C-Nav2000
BSP EOL:	5.2 kts	FEATHER EOL:	N/A °	NAVIGATION SYSTEM USED:	POSMV
WEATHER		MAX FEATHER:	N/A	GRAVITY METER: BMG-II: used, SN213	
WIND SOL:	NW 12.4 kts			MAGNETOMETER: GeoMetrics: used	
WIND EOL:	W 11.1 kts				
SEAS SOL:	1.5 m				
SEAS EOL:	0.5 m				

shift hours	watch personnel	shift hours	watch personnel	shift hours	watch personnel
12:00 - 24:00	Alan Thompson	00:00 - 12:00	Chris Abdouch	06:00-18:00	Dave Martinson

SP	UTC	EVENT	COMMENTS
23004	2:10	SOL	Start of line - 400m shot spacing (Source Only)
23547	0:02	Midnight	First shot of the day 23 June 2019
23586	1:36	LGSP	
	01:36	MMO	Source shut down d/t marine mammal sighting
	01:51	Source	Begin ramp up
	01:53	MMO	Ramp up cancelled, another sighting of marine mammal
	2:08	Source	Begin ramp up
	2:28	Source	Ramp up Complete
23607	2:29	FGSP	
23641	03:51	LGSP	
	03:53	MMO	Source shut down d/t marine mammal sighting
23655	04:26	EOL	Line terminated, still shutdown for marine mammal sighting, Last source fired shot 23641 above

VESSEL POSITION

	Shotpoints	Latitude (N / +)	Longitude (W / +)
FSP	23004	53° 41' 19.176"	156° 26' 07.347"
LSP	23641	55° 41' 28.842"	158° 21' 10.479"

NAVIGATION OFFSET APPLIED

NRP - Stern	29.5m
NRP – COS	230.0m
NRP – CNG	N/A
COS – CNG	N/A
NRP – CMP	N/A

Posnet locations & remarks: good - none - intermittent

				acoustics
Tailbuoy #1	none	Gun string #1	GOOD	None
Tailbuoy #2	none	Gun string #2	Failed	None
Tailbuoy #3	none	Gun string #3	none	None
Tailbuoy #4	none	Gun string #4	Good	None

SP spacing: 400m

line status: Complete