R/V F.V. HUNT
USGS CRUISE 3 1972

72005
HUNT 100476
003

~~G~~ L MT				TIME ZONE	SHIPS		NAVIGATION				
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
16	08	72	1800	4				.	.		
16	08	72	2000	4				.	.		

OPS						COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.

LV. WHOI dock

TROUBLE WITH SHIPS ENGINE, RETURNING TO PORT FOR REPAIRS

Add to above: Wed Aug 16, 1972: Science ready 0800 hours. Delay to 1800 hrs to get lub oil aboard. Notice by ship was 1000 hrs + 2 hrs Monday for 7 barrels of 40 weight Chevron and 1 barrel of 30 weight Chevron Marine oils. None available Boston area. Must come from refinery in N.J. This appears to be an unnessary delay as a result of insufficient notice as to the ship's needs. Multiple engine failures after 2000 hrs 16/08/72. Ship off charter from 2000hrs to at least 1300 hrs Aug 20 1972. Even then proceeding to research area on one engine doing 4.5 kts?

RWD.

~~GMT~~ DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
20	08	72	1430	EDT							
			1525								
			1535								
			1558								
			1612					41° 12.4'	70° 54.6'	L	"C"
			1630								
			1640								
			1649								
			1700					41.09.4	70 50.9	L	"A"
								41.09.8	70 51.1	L	"C"
			1712								
			1730					41.07.8	70 48.6	L	"C"
			1800					41°05.0	70° 46.0	L	C
			1815								
			1830								
			1845								
			1900					41 02.4	70 ~~44~~ 41.9	L	"C"
			1917								
			1924								
			1930								
			1944								
			1945								
			2000					40 58.9	70 34.8	L	"C"
			2015								
			2030								
			2045								
			2100					40 54.8	70 30.3	L	"C"
			2116								
			2130					40 52.5	70 26.4	L	"A"
			2145								
			2200					40 50.6	70 24.6	L	"A"

40 50.6 70 24.9 L "C"

NEWFOUNDLAND + INDIANA

LORAN "C" NAVIGATION

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS COMMENTS
							38,116.7	69,880.2	POSITION CHECK
							38,160.3	69,900.7	UNIBOOM + AIRGUN 120 INS FOR WATER
							38,169.9	69,908.0	airgun off - high pressure hose blew
✓	✓						38,188.9	69,912.7	maggie on
✓	✓	✓					38,200.1	69,918.0	% 136°T Air gun on
✓	✓	✓					38,198.8	69,924.7	Position check. ok.
							38,198.1	69,928.8	Air Gun off Losing air.
							38,197.4	69,932.6	Air gun on. Back off 1652
✓	✓	✓					38,196.6	69,936.7	Position check. ok.
							38,195.8	69,942.2	Air gun off +10 msec S-2
✓	✓	✓					38,193.5	69,949.9	Position check OK.!? red light
✓	✓	✓					38,188.3	69,962.5	" " "
							38,185.1	69,969.2	" " "
							38,182.5	69,975.2	" " "
							38,179.4	69,982.1	40 cu³ gun operating
							38,176.5	69,988.4	Position ck. ok.
							38,173.5	69,996.5	" " change uniboom paper
							38,171.9	70,000.0	Roll #2 on uniboom going
							38,170.7	70,002.3	Position check
									Slowed for traffic.
							38,167.5	70,008.6	Position ✓
							38,164.9	70,013.4	Both red lights on LC
							38,165.1	70,019.8	Position ✓
							38,165.3	70,026.6	✓
							38,166.0	70,032.2	Position ✓ +10 msec S-2
							38,164.0	70,038.8	Position ✓
							38,161.8	70,046.4	Position ✓
							38,160.3	70,052.1	POSITION ✓
							38,158.8	70,058.7	" ✓
							38,158.3	70,065.7	POSITION ✓

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
20	8	72	2245								
			2230					40 48.2	70 22.4	L	"A"
			2245					~~40 46.0~~			
			2300					40 46.2	70 20.2	L	"A"
								40 46.0	70 20.4	L	C
			2315								
			2330					40° 43.8'N	70° 17.7'W	Dredge	A
			2346								
21	08	72	0000					40° 41.5'N	70° 15.8'W	Loran	C
			0015								
			0030					40° 40.0'N	70° 13.7'W	Dredge	A
			0045								
			0100					40° 37.7'N	70° 11.3'W	Loran	C
			0105					40° 37.8'N	70° 11.2'W	Dredge	A
			0116								
			0130					40° 36.2'N	70° 08.9'W	Dredge	A
			0145								
			0200					40° 33.9'N	70° 07.0'W	Loran	C
			0210					40° 34.6'N	70° 07.3'W	Dredge	A
			0216								
			0230					40° 32.3'N	70° 05.2'W	Dredge	"A"
			0245								
			0300					40° 30.0'N	70° 02.8'W	Loran	C
			0300					40° 30.5'N	70° 03.5'W	Dredge	A
			0315								
			0330								
			0345								
			0400					40° 27.0'	~~70~~ 69° 58.4'	L	C
			0419								
			0430								

NEWFOUNDLAND + INDIANA

LORAN "C" NAVIGATION

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Z	COMMENTS AND OBSERVATIONS
✓ ✓ ✓ ✓	38158.5	70073.7	Posit. ✓
	38158.6	70080.1	" ✓
	38 1584	70086.9	"
	38158.7	70093.7	"
	~~38159.6~~	~~70100.5~~	"
	38157.6	70100.5	"
	38156.2	70106.5	" LORAN "A" FIX BRIDGE
	38,158.1	70,113.6	POSITION
	38,158.3	70,119.5	POSITION
	38,157.3	70,125.6	POSITION
	38,155.8	70,131.8	POSITION LORAN "A" FIX BRIDGE
	38,154.7	70,137.7	POSITION
	38,155.0	70,143.6	POSITION
			LORAN "A" FIX BRIDGE
	38,154.7	70,150.1	POSITION
	38,153.7	70,155.3	POSITION
	38,152.8	70,161.5	POSITION
	38,152.3	70,166.9	POSITION
			LORAN "A" FIX BRIDGE
	38,151.9	70,173.0	POSITION
	38,151.9	70,178.6	POSITION LORAN "A" BRIDGE
	38,151.0	70,184.0	POSITION
	38,149.8	70,189.3	POSITION
			LORAN "A" FIX BRIDGE
	38,148.2	70,194.3	POSITION
	38,146.9	70,199.7	POSITION
	38 144.7	70,205.2	Position
	38,143.6	70,210.5	Position
	38142.1	70216.9	"
✓ ✓ ✓	38140.8	70220.6	"

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
21	08	72	0445								
			0500					40° 23.5'	69° 54.3'	L	C
			0509								
			0513								
			0530								
			0545								
			0600					40° 20.3'	69° 50.1'	L	C
			0616								
			0630								
			0645								
			0700					40 16.5	69 44.2		
			0715								
			0730								
			0745								
			0800					40 13.2	69 39.2		
			0815								
			0830								
			0845								
			0900					40 10.3	69 34.2	L	C
			0915								
			0929								
			0930								
			0935								
			0945								
			1000					40 06.7	69 29.5	L	C
			1015								
			1030								
			1045								
			1100					40 02.9	69 24.6	L	C
			1115								

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS Comments
✓		✓					38138.8	70225.4	Position ✓ ok.
✓		✓					38136.3	70230.6	" "
✓		✓					[illegible]	34.9	Tape 2 off
✓		✓					38134.4	70234.9	Tape 3 going
✓		✓					38131.5	70240.5	Position ✓
✓		✓					38128.5	70245.1	" "
✓		✓					38125.5	70250.0	" "
✓		✓					38122.4	70255.2	" "
✓		✓					38120.1	70259.6	" "
✓		✓					38117.6	70264.0	" "
✓		✓					38114.6	70269.5	" "
✓		✓					38111.7	70274.0	" "
✓		✓					38108.9	70278.5	" "
✓		✓					38105.6	70283.2	" "
							38102.3	70287.8	" "
✓		✓					38098.7	70292.8	" " +10 μsec S-2
✓		✓					38095.2	70297.4	" " +10 μsec S-2
							38091.4	70302.4	" " " " " " "
							38087.9	70307.5	
							38084.7	70312.8	Position ✓ +10 μsec
									Air gun shut down, compressor acting up
							38082.8	70318.8	Position check ✓
									Compressor back on, air gun on, water had shut off
✓		✓					38081.1	70324.1	Position ✓
							38079.4	70329.7	S2 +10 μ sec
							38077.5	70335.4	Position ✓ S2 + 10 μ sec
							38076.0	70341.1	" " " " " "
✓		✓					38074.8	70346.5	Position ✓ " " " " "
							38073.3	70352.2	" " " " " " "
							38071.4	70357.8	" " " " " " "

GMT DAY	GMT MO	GMT YR	GMT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
21	08	72	1130								
			1145								
			1200								
			1200					39°59.2'N	69°21.5'W	Bridge	"A"
			1215								
			X 1219					39°58.0'N	69°19.0W	Loran	"C"
			1225								
			1231					39°58.4'N	69°17.5'W	Bridge	"A"
			1245								
			1300					39°59.1'N	69°14.2'W	Loran	A
			X 1300					39°59.0'N	69°14.9'W	Bridge	"A"
			1318								
			1330					40°00.0'N	69°11.5'W	Bridge	"A"
			1345								
			X 1400					40°00.5'N	69 07.5'W	Loran	"C"
			1400					40°01.1'N	69°07.8'W	Bridge	A
			1417								
			1430					40°02.0'N	69°04.5'N	Bridge	A
			1445								
			1500					40°02.0	69 [illegible].2	Loran	"C"
			1500					40°02.8'N	69°00.7'N	Bridge	"A"
			1530								
			1600					40 03.7	68 53.3	"LC"	
			1615					40 04.4	68 54.1	"LA"	Ships
			1630					40 05.1	68 51.0	"LA"	
			1646								
			1700					40 05.3	68 46.6	"LC"	
			1700								

12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS
x	x	x					38 069.6	70363.6	Position ✓ 1133 change tapes
✓	✓	✓					38 067.9	70368.9	Position ✓ + 10 μ S-2
							38,065.3	70,374.3	POSITION
							38,062.7	70,380.3	~~C/C end line 1 start line 2~~ heavy traffic - did not turn 072° T
							38,061.8	70,381.7	C/C end line 1 start line 2 072° T
							38,057.0	70,381.8	steady on new heading - start line #2
							38,050.8	70,381.6	POSITION LORAN "B" FIX
							38,035.0	70,381.2	POSITION
							38,018.5	70,381.1	POSITION
									LORAN "A" FIX
							37,999.7	70,380.7	POSITION
							37,987.2	70,380.0	POSITION
							37,970.8	70,380.4	POSITION
							37,953.8	70,380.4	POSITION
							37,934.4	70,380.1	POSITION LORAN "C" PAPER PUNCH ON AND RUNNING ONE MINUTE SAMPLES
							DEFINATE HEAT PROBLEM OFF RECEIVER		
							37,920.3	70,379.7	POSITION
							37,908.6	70,379.5	POSITION
							37,888.5	70,379.3	POSITION
							37,855.3	70,378.9	POSTION LORAN "C" START OF 10 MIN SAMPLES
							37822.9	70378.2	
							37806.3	70378.1	
							37790.5	70378.0	Position ch.
							37772.8	70377.7	" "
							37758.1	70377.5	" "

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION							
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
21	08	72	1718										
			1730										
			1756										
			1758										
			1800					40	07.2				
			1800					~~40~~	~~06.3~~	68	39.9	L	"C"
			1800					40	07.8	68	38.9	L	"A"
			1807										
			1815										
			1827										
			1830					40	08.4	68	36.5	L	"A"
			1845										
			1857										
			1900					40°	08.8'	68	34.5	L	"C"
			1900					40	09.0	68	34.5	L	"A"
			1917										
			1930					40°	10.1'	68°	31.6'	L	"A"
			1945										
			2000					40	10.7	68	31.1	L	"A"
								~~40~~	~~12.0~~	~~68~~	~~27.2~~	L	"C"
			2015										
			2030										
			2030					40	12.1	68	24.5	L	"A"
			2045										
			2100					40	11.5	68°	22.0	L	"C"
			2100					40	12.2	68	22.8	L	A
			2115										
			2130					40	13.3	68	19.8	L	"A"
			2145										
			2200					40	12.7	68	16.2	L	C
			2200					40	14.0		16.4	L	A
			2215										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.			COMMENTS AND OBSERVATIONS
							37737.6	70377.3	Position ck.
							37725.6	70377.2	" "
							37710.1	70376.9	" " Reel 4 off
									~~Reel 4 off~~ - Change ~~[illegible]~~ paper - Roll 2 ~~Beginning of Reel 5~~
									~~Beginning of Reel 5~~
							37694.1	70376.6	Position ck.
							37685.6	70376.3	maggie Roll #2 going
							37677.1	70375.9	Position check
							37664.3	70375.4	40 in³ gun off - Replacing w/ 120 in³
✓	✓	✓					37661.7	70375.5	Position ✓ slowing ship to 3 knots
							37651.3	70375.3	Position ck.
							37642.0	70375.1	120 in³ gun going
							37640.3	70374.7	Position chk - ship coming up to speed
							37624.3	70374.5	
✓	✓	✓					~~37610.3~~	~~70374.3~~	
							37610.3	70374.3	Position check ok.
✓	✓	✓					37595.0	70379.9	Position check
							37580.1	70373.4	" "
							37564.3	70373.3	
							37549.6	70373.8	" " 52 + 10 μs
							37540.9	70373.7	" " " "
							37528.1	70372.9	
✓	✓	✓					~~37514.0~~	~~70372.9~~	" " " "
							37514.0	70372.9	" " " "
✓	✓	✓					37499.3	70372.8	" " " "
✓	✓	✓					37484.4	70372.5	" " " "
							37471.0	70372.4	
							37456.5	70372.3	

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
21	8	72	2230					40 18.6	68 18.0	LA	
			2245								
			2300					40 15.4	68 10.5	LA	
			2300					40 14.5	68 09.7	LC	
			2330					40 16.5	68 07.5	LA	
			2325								
			2331					~~40 16.5~~	~~68 07.5~~	~~LA~~	
22	08	72	2300		40° 17.4'	L"A"	68° 03.6'W	40° 16.3'N	68° 02.6'W	L"C"	
			0015								
			0017								
			0022								
			0030					40° 18.7'N	68° 00.8'W	L"A"	
			0100					40 18.3 N	67 55.9 W	L"C"	
			0100					40° 19.4 N	67° 56.4'W	L"A"	
			0130					40° 21.1'N	67° 53.8'W	L"A"	
			0201					40° 21.5'N	67° 50.2'W	L"A"	
			0218								
			0230					40° 22.4'N	67° 48.8'W	L"A"	
			0245								
			0300					40° 22.4'N	67° 48.3'W	L"C"	
			0300					40° 22.6'N	67° 47.4'W	L"A"	
			0315								
			0331								
			0341								
			0400					40° 22.7'	67° 36.3'	L"C"	
			0400					40 23.4	67 37.2	LA	
			0419								
			0430								
			0445								
			0500					40° 24.2'	67° 30.2'	L"C"	
			0500					40 24.7	67 30.6	L"A"	

Loran "C" Navigation

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS
							37441.9	70341.7 (72.2)	Comments
							37426.5	70371.7	
							37410.3	70371.0	
							37395.0	70372.2	
							37376.2	70369.5	
							37358.3	70368.8	Missed picture on recorder #2, [redacted]
									Recorder #2 functioning again
							37,341.9	70,368.0	POSITION
							37,324.4	70,367.3	POSITION
									End seismic tape #5
									Start seismic tape #6
							37,307.3	70,366.8	POSITION
							37,273.2	70,365.6	POSITION
									2170
							37,243.3	70,365.5	POSITION POLAROID CAMERA
							37,212.8	70,365.8	POSITION OUT-SHUTTER NOT
							37,196.7	70,365.6	RELEASING
							37,185.0	70,365.7	POSITION
							37,170.0	70,366.0	POSITION Camera OK
							37,154.4	70,365.9	POSITION
							37,139.9	70,365.7	POSITION
							37,123.3	70,366.0	POSITION
							37,105.4	70,366.1	POSITION
							37096.2	703660	"
							~~37077.6~~	~~703658~~	"
							37077.6	703658	"
							37067.1	70365.8	"
							37051.3	70365.7	"
							37036.0	70365.5	"

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
22	08	72	0515										
			0530					40	25.5	67	27.5	L	"A"
			0547										
			0600					40°	25.8'	67°	25.6'	L	C
			0600					40	26.8	67	24.0	L	A
			0617										
			0630					40°	28.7'	67	21.4'	L	A
			~~0643~~										
			0645										
			0648										
			0659					40°	29.4'	67	18.5'	L	A
			0700					40°	27.9'	67°	17.2'	"L	C"
			0715										
			0718					40°	28.4'	67°	15.5'	"L	C'
			0730					40°	29.0'	67°	15.5'	"L	A"
			0745										
			0800					40	25.2	67	13.0	L	C
			0815					40	26.5	67	14.5	L	A
			0830					40	23.6	67	13.7	L	A
			0845										
			0900					40	20.4	67	10.8	L	C
			0900					40	21.5	67	11.5	L	A
			0915										
			0930										
			0945										
			1000					40	15.8	67	08.0	L	C
			1015				time 1000 →	40	17.2	69	09.2	L	A
			1030										
			1039										
			1045										

Loran "C" Navigation

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS Comments
		✓	✓				370292	70365.2	
							37004.4	70364.6	Position ck.
							36985.6	70364.1	"
							369721	70364.1	Position ck.
							36952.3	70363.0	" "
							~~36945~~	~~70362.2~~	Position ck.
							36938.5	70362.2	" "
							[redacted]	[redacted]	change tapes off #6 reel
							36921.7	70361.6	
									start tape reel #7
							36905.8	70361.2	40 in³ gun off off switching to 120 in³
							36904.9	70361.0	Position ck.
							36895.5	70360.5	Position ck
							36891.6	70360.5	Course change 159° Begin Line #3
							36892.8	70363.2	Position ck
							36895.8	70368.9	Position ck
							36899.3	70373.6	" "
							36902.8	70379.4	
							36906.0	70384.2	
							36908.8	70390.1	
							36911.4	70394.7	
							~~14.0~~	~~304~~	
							36914.0	70400.1	
							36918.0	70404.8	
							36921.5	70410.6	Position ✓
							36924.3	70415.1	" " 5 2 +10μ
							36927.3	70421.0	" " 5 2 +10μ
							36930.0	70425.3	" " " "
							~~36932.9~~	~~70431.3~~	Reel changed on recorder #2 (CSP)
							36932.9	70431.3	

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
22	8	72	1100					40	11.1	67	05.1	LC	
			1115					40	12.6	67	06.3	LA	
			1129										
			1130					40	8.7	67	4.1	LC	
			1142										
			1200										
			1200					40	09.4	67	05.7	L"A"	
			1218										
			1230					40°	07.5'N	67°	03.7'W	L"A"	
			1245										
			1300	L"A" SUN LINE (40°05.9'N 67°02.3)				40°	04.5'N	67°	01.8'W	L"C"	
			1316										
			1331					40°	03.5'N	67°	01.4'W	L"A"	
			1345										
			1400	L"A" BRIDGE (40°01.5'N 67°00.7W)				40°	00.7'N	67°	00.0'W	L"C"	
			1416										
			1431	L"A" Bridge 1430 (39°59.4' 67°00.2)									
			1445										
			1500	L"A" Bridge (39 58.1 67 59.6)				39°	57.5'N	66°	59.5'W	L"C"	
			1515										
			1530										
			1545										
			1600	bridge (39°55.0' - 66°59.0')				39°	54.2	66	58.6	LC	
			1615										
			1630	bridge (39°53.3 - 66°58.0')									
			1645										
			1700					39°	50.6	66°	56.5		
			1715										
			1730										
			1745										

LORAN "C" NAVIGATION

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS Comments
	✓	✓	✓				36935.7	70435.3	
							36940.1	70440.9	
							~~36943.7~~	~~7445.1~~	disconnect air gun for repair
							36943.7	70445.1	slow to 2 kts
							36949.1	70447.9	
							36944.0	70448.9	
							—	—	—
							36944.1	70451.0	uniboom back in operation resume speed 5 kts
							36,945.4	70,453.5	POSITION
							36,948.2	70,458.1	POSITION cont line #3
							36,951.4	70,462.7	POSITION (1310 Reel 8 on)
							36,954.3	70,466.6	POSITION
							36,958.0	70,471.0	Position
							36,961.8	70,474.3	Position
							36,965.5	70,478.3	POSITION
							36,970.4	70,482.3	POSITION
							36,974.7	70,485.5	POSITION
							36,978.3	70,489.0	POSITION
							36,982.0	70,492.6	POSITION
							36,985.3	70,495.6	POSITION
							36,989.5	70,499.9	POSITION
							36,994.0	70,503.0	POSITION
							36,998.6	70,506.3	Position
							37002.4	70510.4	"
							37005.6	70513.2	"
							37009.1	70516.1	"
							37012.6	70519.7	"
							37016.4	70523.0	"
							37019.9	70525.4	"
							37023.0	70529.2	

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION					
							LATITUDE		LONGITUDE			
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	± DEGREES	± MINUTES	± DEGREES	± MINUTES	TYPE	QUAL.
22	08	72	1800		L"A" Bridge (39 49.3		6656.5)	39	48.3	~~66~~	~~55.9~~	L	"C"
			1816							66	55.9		
			1826										
			1830					39	47.5	66	55.5	L	"A"
			1845										
	1854		1848		L"A" Bridge 1854 39°49.8 6654.0								
			1900					39	48.4	66	53.4	L	"C"
			1915										
			1928										
			1930										
			1945										
			2000					39	46.0	66	52.4	L	A
								39	45.5	66	53.0	L	C
			2015										
			2030					39	44.5	66	51.9	L	A
								~~39~~	~~45.5~~	~~66~~	~~53.0~~	~~L~~	~~C~~
			2045										
			2100					39	42.8	66	50.9	L	A
			2100					39	42.0	66	50.5	L	C
			2115										
			2130										
			2145										
			2200					39	39.5	66	48.–	L	C
								39	39.5	66	50.3	L	A
			2215										
			2230					39	38.0	66	49.1	L	A
			2245										
			2300					39	36.4	66	47.–	L	"C"
			2300					39	37.0	66	49.0	L	"A"
			2315										
			2330										
			2345										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS Comments
	✓	✓	✓				37023.5	70531.7	Position
							37025.0	70534.2	Position
									Turn to 4,030°T left to investigate
							37023.0	70536.1	Position
							37005.9	70531.5	Position
							~~36999.0~~	~~70531.0~~	Coming to course 176°
							36999.0	70531.0	Position (1854 S/O old 159°T course)
							37001.7	70533.6	"
									End of reel #8
							37006.4	70536.3	start reel #9
							37009.4	70539.7	Position check.
							37012.9	70542.0	" " Note: Start LC Posit. from 1/3 188,800 chart
							37015.6	70544.8	" "
							37018.4	70548.3	" "
							37020.9	70550.8	" "
							37023.4	70553.9	" "
							37026.0	70555.7	" "
							37028.7	70558.6	" "
							37031.9	70562.4	" "
							37034.9	70565.1	
							~~37 38.~~	~~68.~~	
							37038.2	70568.4	
							37041.5	70571.7	
							37044.9	70574.7	
							37048.4	70577.6	
							37052.2	70581.1	
							37056.5	70584.3	
							37059.3	70587.7	

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
23	08	72	0000	EDT				39°	34.3'	66°	48.7'	Bridge A	
			0015										
			0030					39°	32.2'	66°	47.4'	Bridge A	
			0050										
			0100					39°	30.6'	66°	46.0'	Bridge A	
			0130					39°	29.1'	66°	45.8'	Bridge A	
			0145										
			0200					39°	27.0'	66°	43.9'	Bridge A	
			0230					39°	25.9'N	66°	44.1'W	L "A"	
			0245	EDT									
			0300					39°	24.2'N	66°	43.7'W	L "A"	
			0315	EDT									
			0330					39°	20.9'N	66°	43.0'W	L "A"	
			0400					39°	20.1'N	66°	42.4'W	L "C"	
			0415										
			0430					39°	19.2'N	66°	42.7'W	L "A"	
			0445					39°	18.2'N	66	42.0'W	L "A"	
			0500					39°	14.3'	66°	40.3'	L "C"	
			0515										
			0530					39°	14.4'	66°	41.6'	L "A"	
			0545										
			0600					39°	13.5'	66	41.0'	L "A"	
			0616					39°	12.3'	66	41.3'	L "C"	
			0630					39	12.6'	66	41.7'	L "A"	
			0645										
			0700					39	11.7	66	41.2	L "A"	
			0700					39	09.8	66	40.0	L "C"	
			0720										
			0730					39	10.2	66	40.0'	L "A"	
			0740										

Loran "C" Navigation

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS	Comments
✓	✓	✓					37,060.6	70,591.3	POSITION	Bridge fix
✓	✓	✓					37,062.1	70,594.3	POSITION	
✓	✓	✓					37,063.4	70,597.7	POSITION	Bridge fix
✓	✓	✓					37,065.5	70,602.5	POSITION	
✓	✓	✓					37,066.8	70,604.3	POSITION	Bridge fix
✓	✓	✓					37,071.5	70,611.9	POSITION	Bridge fix
✓	✓	✓					37,074.3	70,614.7	POSITION	
✓	✓	✓					37,077.8	70,618.4	POSITION	Bridge fix
✓	✓	✓					37,085.0	70,625.1	POSITION	Bridge fix
✓	✓	✓					37,089.1	70,628.5	POSITION	
✓	✓	✓					37,093.0	70,632.0	POSITION	Bridge fix
✓	✓	✓					37,097.3	70,634.5	POSITION	
✓	✓	✓					37,101.9	70,638.1	POSITION	
✓	✓	✓					37,111.3	70,644.4	POSITION	
✓	✓	✓					37116.3	70647.4	"	
✓	✓	✓					37121.9	70651.4	"	
✓	✓	✓					37127.4	70653.6	"	
✓	✓	✓					37133.3	70657.2	"	
✓	✓	✓					37138.2	70660.7	"	
✓	✓	✓					37143.1	70663.2	"	
✓	✓	✓					37148.5	70666.2	"	
✓	✓	✓					37153.5	70669.9	Position	
✓	✓	✓					37155.1	70671.9	Position	
✓	✓	✓					37155.3	70673.9	Position ck.	
✓	✓	✓					37155.6	70677.6	"	
✓	✓	✓					37156.1	70680.7	Position	
✓	✓	✓					~~37156.8~~	~~70683.1~~	~~Position ck.~~	
✓	✓	✓					37156.9	70683.1	"	
✓	✓	✓					37157.4	706845	"	
✓		✓							Airguns off	

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
23	08	72	0743										
			0800					39	7.0	66	37.-	LC	
			0815										
			0830										
			0845										
			0900					39	7.4	66	37.	LA	
			0908										
			0915										
			0930					39	09.0	66	41.0	LA	
			0945 ~~1000~~										
			1000					39	10.6	66	43.	LC	
			1008					39	11.1	66	45.2	LA	
			1015										
			1030					39	13.2	66	48.1	LA	
			1045										
			1100					39	14.25	66	51.1	LA	
			1115					39	14.0	66	53.	LC	
			1130					39	17.4	66	54.9	LA	
			1145										
			1200					39°18.5'N L"A"	66°58.2'W	39°18.8'N	66°58.0'W	L"C"	
			1213										
			1215										
			1228										
			1230					39°21.1'N	67°03.2'W			L"A"	
			1246										
			1253										
			1300					39°22.3'N L"A"	67°06.0'W	39°21.6'N	67°05.2'W	L"C"	
			1309										
			1316					1330 EDT	39°22.5'	67°08.4'W	L"A"		
			1400										

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Z	COMMENTS AND OBSERVATIONS Comments
✓✓✓	37158.1	70688.8	Air gun back on
✓✓✓	37159.2	70690.4	Position
✓✓✓	37160.3	70691.7	Position ✓
	37161.8	70692.8	
	37162.9	70693.7	
	37163.9	70694.7	Start C/C To 300° end line 3
			S/O start line 4
	37173.4	70692.8	
	37181.4	70687.7	
	37188.7	70682.7	
	37195.6	70678.9	
	~~37202.7~~	~~70672.8~~	~~Position ✓ RDW~~
	37,202.7	70672.8	Position ✓
	37210.3	70668.5	" "
	37218.3	70663.6	
	37226.4	70659.8	
	37233.8	70654.2	
	37240.7	70650.7	
	37247.6	70645.3	
	37,254.6	70,641.6	POSITION
			airgun raised nearer the surface
	37,261.0	70,637.1	POSITION
	37226.7	70633.0	Maggie recording start roll #2
	37267.2	70632.7	Position chk
	37,274.6	70,628.5	POSITION
	37,278.8	70,626.6	course adjustment cont line #4
	37,282.5	70,625.2	POSITION
	37,288.6	70,623.1	Course adjustment cont line #4
	37,292.2	70,623.8	POSITION
	37,300.4	70,623.6	POSITION

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
23	08	72	1341	EDT									
			1345										
			1400					39°	22.3'N	67°	12.0'W	L	"C"
			1400					39°	22.7'N	67°	10.8'W	L	"A"
			1430					39°	22.6'N	67°	13.3'W	L	"A"
			1500					39°	22.9'N	67°	15.9'W	L	"A"
			1515										
			1531										
			1539										
			1600					39°	24.5'	67°	18.8'	L	"C"
			1600					39°	25.8'	67°	19.0'	L	"A"
			1615										
			1630					39	27.8'	67°	19.5'	L	"A"
			1646										
			1655										
			~~1654~~										
			1654										
			1700					39 ~~39~~	29 ~~39~~.4	67	20.2	L	"C"
			1715										
			1730										
			1745					(39	30.0	67	22.0 ~~20.2~~	L	A)
			1800					~~39°~~	~~33.7'~~	~~67°~~	~~23.5'~~		
			1800					39	33.3	67	22.4	L	C
			1815					~~39~~	~~33.3~~	~~67~~	~~22.4~~	~~L~~	~~C~~
			1830		39° 38.2		67° 23.2	~~39~~	~~36.3~~	~~67~~	~~22.8~~	L	"A"
			1846										
			1900					39°	38.9'	67°	23.6	L	"C"
			1900					39°	39.8'	67°	23.8	L	"A"
			1915										

LORAN "C" NAVIGATION

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS: X	Z	COMMENTS
							37,307.6	70,623.5	course adjustment
							37,309.4	70,623.5	POSITION CHECK
							37,317.9	70,623.0	POSITION
									LORAN "A" FIX
							37,336.1	70,622.7	POSITION
							37,352.4	70,620.4	POSITION
							37,360.7	70,618.5	POSITION
							37,369.5	70,616.0	course adjust to 348° T
									END ROLL #2 UNIBOOM
							37364.2	70607.2	Position - UNIBOOM (from Roll #3) OFF
							37360.7	70602.8	UNIBOOM still off
							37356.5	70597.5	Position
							37352.8	70593.6	
							37350.5	70591.7	Uniboom on deck. Broken
									jumper conection due to
									weed buildup.
									Resume speed
							37349.5	70590.8	Position ck
							37345.5	70585.1	
							37341.4	70581.1	Position ck.
							37337.0	70575.2	Position ck.
							37332.6	70571.5	Position ck
							37327.1	70566.0	Position ck.
							37321.9	70561.7	Position ck.
							37315.7	70555.9	
							37310.6	70552.2	Position

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
23	08	72	1930	EDT									
			1931										
			1932										
			1945										
			2000					~~39~~ ~~67~~	~~42~~ ~~24~~ .5	67	24.-	LC	
			2015										
			2019										
			2020										
			2030					39	44.8	67	25.3	LA	
			2045										
			2100					39	47.1	67	25.0	LA	
			2100					39	46.0	67	24.9	LC	
			2115										
			2130					39	49.1	67	25.7	LA	
			2145					3					
			2200					39	50.6	67	24.4	LC	
			~~2215~~					39	51.3	67	26.1	LA	
			2215										
			2230										
			2230					39	39.1	~~67~~ 67	26.7	LA	
			2245										
			2300					39	56.4	67	27.7	LA	
								39	55.1	67	26.4	LC	
			2315										
			2330					39	49.1	67	28.4	LA	
			2335										
			2345										
24	08	72	0000		40°01.4 L"A"	67°30.0		40°00.7'N		67°29.3'W		L"C"	
			0015										
			0030					40°04.2'N		67°31.7'W		L"A"	

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Y	COMMENTS AND OBSERVATIONS Comments
	37298.4	70542.5	Position
			Air gun down
			reducing speed
	37292.7	70589.5	Position ck.
	37288.0	70536.5	
	37282.1	70534.1	
	~~37277.7~~	~~70532.9~~	Gun on, ship resumed speed
	37279.7	70532.9	
	37274.9	70530.2	
	37267.6	70524.7	
	37260.02	70520.0	
	~~37254.0~~	~~70515.5~~	
	~~37254.9~~	~~70515.5~~	
	~~37249.1~~	~~70511.9~~	
	37249.1	70511.9	
	37243.2	70507.4	
	37237.2	70503.2	
	37231.3	70498.2	Position ck.
	37225.0	70493.3	
	~~37219.1~~	~~70488.2~~	
	37219.1	70488.2	
	37213.4	70482.7	
	37207.7	70477.2	
	37201.8	70471.7	~~c/c~~
			50 c/c to 334°T
	37197.7	70465.2	
	37,195.7	70,460.3	
	37,193.4	70,454.5	POSITION
	37,192.0	70,449.4	POSITION

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
24	08	72	0046	EDT									
			0100					40°	05.8'N	67°	33.1'W	L	"C"
			0100					40°	06.2'N	67°	33.2'W	L	"A"
			0115										
			0130					40°	08.6N	67°	35.3W	L	"A"
			0145										
			0200					40°	09.5	67	37.0W	L	"C"
			0200					40°	11.3N	67	38.7W	L	"A"
			~~0216~~										
			0230					40°	12.8'N	67°	39.5'W	L	"A"
			0300					40°	13.7N	67°	40.0W	L	"C"
			0300					40	14.7N	67	40.9W	L	"A"
			0315										
			0330					40°	17.8N	67°	42.5	L	"A"
			0345										
			0400					40	~~18.4~~ 19.4 N	67°	~~42.4~~ 43.5	L	"C"
			0400					40	19.8N	67	43.5	L	A
			0409										
			0412										
			0416										
			0422										
			0427										
			0430					40	22.8	67	46.5	L	"A"
			0445										
			0500					40	25.0	67	46.6	L	"A"
			0500					40	24.2	67	46.3	L	"C"
			0515										
			0530					40	27.3	67	47.8	L	"A"
			0545										
			0600					40	29.6	67	49.2	L	C
			0600					40	29.5	67	49.4	L	A

LORAN "C" NAVIGATION

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Z	COMMENTS AND OBSERVATIONS comments
	37,191.2	70,443.8	POSITION
	37,190.9	70,438.9	POSITION
			LORAN "A" FIX
	37,191.0	70,433.6	POSTION
	37,191.0	70,429.0	POSITION
	37,191.4	70,424.0	POSTION
	37,191.9	70,418.6	Position
	~~37,~~	~~70,~~	
	37,191.3	70,409.1	POSITION
	37,186.2	70,399.5	POSITION
	37,183.1	70,393.9	POSITION
	37,180.0	70,388.9	POSITION
	37,176.7	70,384.0	POSITION
	37,173.0	70,378.5	POSITION
		/	End reel #13
	[redacted]	[redacted]	Start reel #14
	37168.8	70372.8	Position
	37167.4	70370.7	gun down momentarily
			a.a.k - air gun on - 4 sec sweep
	37165.3	70367.4	Position
	37162.4	70362.7	Position
	37159.2	70356.6	"
	37156.0	70351.2	"
	37152.4	70344.9	Position ck.
	37148.9	70339.7	" "
	37144.5	70332.5	Position

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
24	08	72	0615										
			0630					40	33.0	67	51.2	L	"A"
			0645										
			0700					40°	35.1	67°	52.4	L	"C"
			0700					40	35.5	67	52.5	L	"A"
			0716										
			0730					40	39.3	67	54.5	L	"A"
			0745										
			0800					40	38.2	67	55.9	L	C
			0805					~~40~~	~~38.2~~	~~67~~	~~55.9~~	~~L~~	~~C~~
			0818										
			0800					40	42.1	67	56.5	L	A
			0832										
			0840										
			0842										
			0850										
			0900					40	48.1	67	58.9	L	C
			0915										
			0930					40	53.0	68	01.5	L	A
			0941										
			0945										
			1000					40	55.3	68	02.6	L	A
								40	54.5	68	02.5	L	C
			1015										
			1030										
			1045										
			1100					40	59.8	68	5.9	L	C
								41	01.6	68	6.4	L	A
			1115										
			1130										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS Comments
		✓	✓				37138.0	70325.6	Position check ok.
		✓	✓				37135.4	70319.5	" " "
		✓	✓				371325	70 3139	Position check
		✓	✓				371282	703072	Position check
		✓	✓				~~37122.9~~	~~70299.2~~	" "
							37122.9	70299.2	
		✓	✓				37118.2	70292.8	Position
		✓	✓				37113.0	70285.3	Position ok
		✓	✓				37107.7	70277.7	" "
							—	—	slow to pull gun, gun off
							37103.1	70271.0	Position ✓
							37 097.8	70 263.2	Working on compressor, putting in Uniboom
							370 850	702 59.4	
									Uniboom on
							370 91.5	702 54.1	
							37087.7	70249.2	
							370829	702 41.3	
							370 78.3	702 33.4	
									~~Air gun on 40 in³ w shape~~
							37072.5	702 25.6	0946 40in³ air gun w/ water shape on
							370669	702 18.6	
							—	—	
							370632	702 10.9	
							370595	702 03.2	
							37056.8	701987	
							37054.2	701936	
							—	—	
							37052.6	701891	
							37052.2	701834	

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
24	08	72	1130					41	03.4	68	09.0	LA	
			1145										
			1200		(41°05.4 L"A"	68°10.8'W)		41°	04.5	68°	09.4	L"C"	
			1230					41°	07.5'N	68°	11.6'W	L"A"	
			1245										
			1300					41°	08.9'N	68°	11.7'W	L"C"	
			1300					41°	09.6'N	68°	13.2'W	L"A"	
			1315										
			1330					41°	11.6'N	68°	14.8'W	L"A"	
			1345										
			1400		(41°13.5'N L"A"	68°16.0'W)		41°	12.5'N	68°	14.7'W	L"C"	
			1402										
			1415										
			1425										
			1430					41°	13.4'N	68°	15.7'W	L"C"	
			1445										
			1500		(41°14.7'N L"A"	68°17.0'W)		41°	13.9'N	68°	16.5'W	L"C"	
			1505										
24	08	72	1530 EDT										
			1544										
			1545										
			1553										
			1600		(41 ships L"A"	17.8 68 20.6)		41	19.4	68	19.5	LC	
			1615										
			1630		41°20.0' ship L"A"	68°22.6'		41	20.5	68	23.2	LC ships	
			1700										
			1700		~~41 20.8~~			41	20.8	68	22.8	LC	
			1720										
			1731										
			1745										

LORAN "C" Navigation

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS Comments
✓	✓	✓					37 ---	70 ---	
							370603.	70178.5	
							37,046.3	70,172.8	POSITION
							37,038.2	70,162.4	POSITION
							37,035.9	70,157.8	POSITION
							37,033.3	70,152.8	POSITION
							37,031.6	70,147.9	POSITION
							37,030.2	70,143.3	POSITION
							37,029.0	70,139.6	POSITION
							37,028.4	70,134.3	POSITION
							37,028.3	70,134.0	angun off - hit high pressure stage
							37,028.8	70,131.2	POSITION
							37,029.2	70,127.9	ship slowed to 2 knots - angun down
							37,029.3	70,127.8	POSITION
							37,029.8	70,126.7	POSITION
							37,030.5	70,126.3	
									ship resumed normal speed - angun on
							37,032.2	70,119.7	POSITION
							37,033.5	70,115.1	angun off - torque head on LAOQ
							37,033.5	70,115.2	POSITION
							37,034.3	70,112.7	angun back on
							37035.5	70110.6	Position check
							37035.8	70105.6	Position check
							37035.3	70101.0	" "
							37030.1	70090.7	
									COURSE CHANGE to 344°
							370229	70082.4	
							37018.7	70077.9	Position
							37012.7	70072.2	"

GMT DAY	GMT MO	GMT YR	GMT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
24	08	72	~~1800~~					41	26.6	68	25.4	LC	
			~~1800~~									LA	
			~~1800~~										
			~~1816~~										
			1816										
			1830										
			1849										
			1900										
			1915										
			1930										
			1946										
			1948										
			~~2000~~										
			2000										
			2007										
			2015										
			2020										
			2025										
			2030										
			2035										
			2040										
			2045										
			2050										
			2055										
			2056										
			2100										
			2105										
			2107										
			2110										
			2119										

LORAN "C" NAVIGATION

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Y	COMMENTS AND OBSERVATIONS
			Comments
	37006.9	70065.9	Position ck
	X	Y	switch to Nantucket slave
	37000.8	49081.3	position
	369948	49076.2	" 1846 Tape 15 off
	36985.2	49069.1	" 1848 Begin Tape 16
	36979.1	49065.1	Position check
	36970.8	49060.2	" "
	36962.0	49055.7	Position ck.
	X	Y	
	36952.0	70046.7	" "
	36951.3	70046.0	UNIBoom off (OD 1850)
	36945.8	70041.9	Position
	~~369948~~	~~70045.5~~	
			UNIBoom off (Fuse)
	36934.8	70034.5	position check } 5-2 off
	36937.8	70032.8	" " } too high
	36936.3	70031.1	" " }
	36938.5	69998.5	" " }
	36938.6	69985.0	pos. ✓ 5-2 is ok now.
	36938.2	69982.6	
	36938.0	69980.6	pos. ck.
	36938.0	69977.3	" "
	36937.8	69976.2	c/c To 055° T
	36935.4	69974.9	
	36929.4	69974.5	
	36926.1	69974.1	c/c To 145° T
	36924.1	69974.3	
	36925.4	69975.6	Steady on

LC Corrected

GMT				TIME ZONE	SHIPS		NAVIGATION										
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
			2115										
			2120										
			2125										
			2130										
			2135										
			2140										
			2145										
			2150										
			2155										
			2200										
			2205										
			2215										
			2230										
			2233										
			2240										
			2245										
			2300										
			2315										
			2330										
			2340										
			2342										
			2345										
25	08	72	0000										
			0015										
			0030										
			0045										
			0100										
			0115										
			0124										
			0131										

Loran "C" Navigation

OPS (12 KHz, 3.5 KHz, CSP, MAG, GRAV., SONO., STA.)	COMMENTS AND OBSERVATIONS		
	#	Z	Comments
	36925.5	69975.6	Position check
	36926.9	69977.4	" "
	36926.4	69979.2	" "
	36926.4	69981.1	" "
	36927.0	69982.5	" "
	36927.3	69984.0	
	36927.1	69985.6	
	36926.9	69987.3	
	36926.5	69989.3	
	36925.8	69990.7	
	36925.6	69992.4	
	36926.5	69995.7	
	36926.9	70002.0	
	36926.5	7000 2.8	
	36926.1	7000 5.1	Start maneuver to avoid traffic
	36926.1	70006.3	
	36927.4	70011.8	
	36929.6	70015.5	
	36923.7	70020.4	Turn to 055°
	36912.0	700 17.8	
	36911.9	700 18.8	S/O
	36912.7	700 16.5	
	36,912.7	70,010.7	POSITION
	36,910.8	70,003.6	
	36,914.9	69,997.5	
	36,919.9	69,991.2	
	36,914.3	69,984.2?	POSITION
	36,914.8	69,983.2?	
		Down-OUT	C/C
	36,907.5	49,020.9	switched to Nantucket Slave

Lost Down Slave completely - would not reacquire

GMT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
25	08	72	0136										
			0145										
			0200										
			0202										
			0215										
			0230										
			0245										
			0300										
			0305										
			0315										
			0330										
			0345										
			~~0400~~										
			0400										
			0415										
			0416										
			0430										
			0441										
			0444										
			0445										
			0500										
			0502										
			0510										
			0515										
			0517										
			~~0530~~										
			0530										
			0532										

LORAN "C" Nav.

OPS (12 KHz, 3.5 KHz, CSP, MAG, GRAV., SONO., STA.)	X	Y	COMMENTS AND OBSERVATIONS
			Comments
			Bridge reports heavy traffic will maintain 055°T heading
	36891.2	49,021.3	Position
	36901.7	49,023.2	Position
	36902.0	49,023.6	Steady on course
	36,901.7	49,026.0	
	36,901.5	49,029.0	
	36,901.9	49,032.5	
	36,902.9	49,036.2	
	SHIP MANEUVERING		Bridge reports heavy traffic ahead will alter course slightly - zig zag
	36,913.1	49,039.1	" "
	36,934.5	49,090.8	still maneuvering
	36,948.5	49,043.0	" "
	~~36[illegible]~~	~~49[illegible]~~	~~Position~~ ← bad
	36938.1	49046.7	
	36922.9	49050.1	
			Reduce speed
	369148	051.2	Position
			increase speed c/c 000T
	?		c/c 340
	36910.6	49051.5	
	36909.6	49047.8	
			Reduce speed to ≈ 12½ knots
			All ahead
	36908.7	49045.3	Position ✓
			c/c 000T
	36899.2	49041.2	
			c/c 320°

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
25	08	72	0534										
			0539										
			0540										
			0546										
			0548										
			0600										
			~~0615~~										
			0615										
			0619										
			0630										
			0638										
			0641										
			0645										
			0647										
			0656										
			0701										
			0715										
			0730										
			0735										
			0736										
			0745										
			0800										
			0810										
			0815										
			0622										
			0830										
			0845										
			0900										
			0912										

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV / SONO / STA)	X	Y	COMMENTS AND OBSERVATIONS / Comments
			C/c to 305°
			Slowed ship
			coming on course 145°T
	36899.7	49038.0	Position check
	36899.2	49038.2	Resume survey live S/o 145°T
	36801.4	49041.4	Position
	~~36901.4~~	~~49041.4~~	
	36909.6	49044.8	Position
	36909.7	49045.9	Begin C/c to 052°T
	36899.5	49045.6	Position
	36899.1	49045.1	Begin C/c to 320°T
	36887.9	49044.5	S/o 325°T
	36888.0	49043.5	Position
			Reduce speed ≈ 2 knots
	36888.0	49041.1	Resume speed
	36888.2	49039.9	Position
	36888.2	49036.4	"
	36897.3	49032.6	"
			End of Reel #17
			Begin Reel 18
	36888.0	49028.8	Position
	~~[illegible]~~	~~[illegible]~~	
	36889.4	49025.2	
	36890.4	49023.0	055° c/c
	36885.7	49022.5	
	36878.4	49022.6	S/o 055°T
	36878.1	49023.8	
	36878.3	49026.3	
	36878.3	49028.8	
	36877.5	49031.1	Slowing down for traffic

GMT				TIME ZONE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
25	08	72	0915					.	.		
			0930					.	.		
			0945					.	.		
			1000					.	.		
			1015					.	.		
			1030					.	.		
			1045					.	.		
			1050					.	.		
			1055					.	.		
			1100					.	.		
			1115					.	.		
			1130					.	.		
			1145					.	.		
			1200					.	.		
			1215					.	.		
			1230					.	.		
			1245					.	.		
			1300					.	.		
			1315					.	.		
			1330					.	.		
			1339					.	.		
			1342					.	.		
			1346					.	.		
			1358					.	.		
			1400					.	.		
			1401					.	.		
			1402					.	.		
			1415					.	.		
			1430					.	.		
			1445					.	.		

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS Comments
							36877.5	49031.3	position check
							36876.6	49032.4	pos. ✓
							36876.5	49035.2	pos. ✓
							36879.8	49037.8	pos. ✓
							36895.8	49037.8	turning continuously
							36897.6	49037.5	to avoid
							36880.4	49037.7	traffic
							36874.8	49038.4	
							36869.3	49039.2	
							36864.4	49039.8	heading towards sites 7-8
							36847.0	49041.8	
							36839.4	49045.2	change to 10 min punch
							36815.7	49047.0	
							36,792.8	49,048.2	
							36,767.2	49,047.9	
							36,740.5	49,047.3	
							36,715.0	49,047.0	
							36,691.4	49,046.8	
							36,666.4	49,046.4	
							36,643.0	49,046.3	
							36,628.7	49,046.3	C/C 315°
									will detour - skyin ahead
							36,627.9	49,045.6	
							36628.3	49,044.4	End tape 18
							36628.3	49,044.4	
									Begin tape 19
							36,629.1	49,043.9	START SITE SURVEY 7+8
							36,629.0	49,041.5	
							36,627.1	49,038.5	
							36,626.3	49,035.8	

GMT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
25	08	72	1500	EDT									
			1515										
			1530										
			1535										
			1543										
			1553										
			1600										
			1615										
			1630										
			1642										
			1645										
			1652										
			1654										
			1700										
			1703										
			1710										
			1715										
			1730										
			1746										
			1752										
			1800										
			1801										
			1805										
			1807										
			1814										
			1817										
			1830										
			1845										
			1900										

Loran "C" Navigation

OPS (12 KHz, 3.5 KHz, CSP, MAG, GRAV., SONO., STA.)	X	Y	COMMENTS AND OBSERVATIONS Comments
	36,628.9	49,033.3	SURVEY
	36,629.6	49,030.4	POSITION SITE's 7+8
	36,629.6	49,027.9	"
	36,629.1	49,026.5	C/C to 055°T
	36,617.0	49,026.3	C/C 5th line to 5th 2nd line
	36,616.9	49,027.9	Steady on new heading
	36615.7	49029.4	Position ✓
	36616.1	49032.9	Position
	36617.5	49036.6	"
	36617.9	49040.0	C/C
	36615.5	49040.3	S/O 055°T
	36605.1	49040.4	C/C 325°T
	36603.6	49040.1	S/O 325°T
	36603.3	49038.8	Position ✓
			Ships Power failure
			Uniboom shutdown
			Ship slowed Uniboom cleared
			Up to Speed
	36603.7	49036.3	Position ✓
	36604.2	49033.1	
	36604.3	49029.8	
			ship slowed
	36603.7	49027.8	Position
	36603.4	49027.5	Ship up to speed
	36603.4	49026.9	C/C to 055°T
	36601.8	49026.7	S/O 055°T
	36592.4	49029.9	C/C 145
	36590.7	49027.1	S/O 145
	36589.6	49029.6	Position ✓
	36591.9	49032.4	"
	36592.5	49035.1	Position ✓

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
25	08	72	1901		115								
			1905		145								
			1915		145								
			1923		c/c								
			1926		055								
			1930		055								
			1933		c/c								
			1936		325								
			1945		325								
			2000		325								
			2015		325								
			2030		325								
			2042		c/c 055								
25	08	72	2045										
			2056		1450								
			2100		145								
			2112		145								
			2115		145								
			2130		145								
			2145		145								
			2200		145								
			2213		c/c 265								
			2215		265								
			2216		s/o 270								
			2230		270								
			2245		270								
			2300		270								
			2315		o/c								
			2329		057								
			2330		057								

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	COMMENTS AND OBSERVATIONS
		—					36592.5	49035.1	c/c to 115 to Avoid vessel
		—					36592.6	49036.2	Back on course 145°
		—					36592.5	49038.0	Position —
		—					36592.5	49039.7	c/c to 055°T
		—					36590.8	49039.8	s/o 055°T
		—					36585.1	49039.6	Position ✓
		—					36580.4	49039.4	c/c to 325°T
		—					36578.8	49039.1	s/o 325°T
		—					36580.5	49037.3	Position —
							36580.7	49034.0	Position ✓
							36581.8	49031.2	Position ✓
							36581.4	49028.5	" "
							36581.4	49026.9	055° c/c
							36579.4	49026.1	Position ✓
							36567.6	49026.6	s/o 145T
							36568.0	49027.1	Position ✓
									shut down uniboom to change paper
							36568.2	49029.4	Pos. ✓
							36567.8	49031.9	Pos. ✓
							36567.4	49034.7	Pos. ✓
							36567.3	49037.5	Pos. ✓
							36567.5	49040.2	c/c to 265°T
							36569.5	49040.5	Pos ✓
							36570.7	49040.2	s/o to 270°T
							36582.5	49038.3	Pos. ✓
							36597.5	49036.5	Pos. ✓
							36613.6	49034.9	Pos. ✓
							36627.9	49033.5	Pos. ✓ c/c maneuvers for sonibouy
							36628.0	49033.8	s/o 057°T
							36624.7	49033.8	Pos. ✓

GMT				TIME ZONE	SHIPS		NAVIGATION						
								LATITUDE		LONGITUDE			
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	± DEGREES	± MINUTES	± DEGREES	± MINUTES	TYPE	QUAL.
25	08	72	2331						.		.		
			2345						.		.		
26	08	72	0000						.		.		
			0015						.		.		
			0030						.		.		
			0044						.		.		
			0046						.		.		
			~~0100~~						.		.		
			0100						.		.		
			~~0115~~						.		.		
			0115						.		.		
			~~0130~~						.		.		
			0130						.		.		
			~~0145~~						.		.		
			0145						.		.		
			~~0200~~						.		.		
			0200						.		.		
			0206						.		.		
			0215						.		.		
			0219						.		.		
			0230						.		.		
			0245						.		.		
			0248						.		.		
			0252						.		.		
			0300						.		.		
			0306						.		.		
			0315						.		.		
			0319						.		.		
			0330						.		.		
			0345						.		.		
			0400						.		.		
			0415						.		.		
			0430						.		.		
			0445						.		.		

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS		
							36623.6	49033.9	sonibouy dropped
							36603.4	49033.7	pos. ✓
							36,581.4	49,033.3	POSITION SONOBUOY CON'T
							36,559.2	49,033.7	
							36,537.2	49,033.9	END SONOBUOY RUN
							36,514.2	49,034.4	END SITE SURVEY #8 Start C/C to survey site #9
							36,511.9	49,034.0	steady on new heading 320° T start
									site survey #9
							36,511.8	49,031.3	Position
							36,512.2	49,028.4	Position
							36,512.3	49,025.4	Position
							36,511.6	49,022.6	Position
							36,511.9	49,020.0	Position
							36,511.9	49,018.9	begin turn
							36,499.7	49,018.7	Position
							36,500.1	49,019.3	Steady on 155° T
							36,500.1	49,021.0	Position
							36,500.7	49,023.4	Position
									End seismic tape #20
									Start seismic tape #21
							36,500.8	49,026.1	Position
							36,500.9	49,027.1	Begin turn
							36,491.2	49,027.6	Position 320
							36,487.1	49,027.1	Course change - S/O 320°T
							36,486.7	49,025.3	Position
							36,486.8	49,022.9	Position
							36,486.8	49,020.6	Position
							36487.1	49018.6	Position
							36487.1	49016.7	"
							36488.0	49014.9	Position

GMT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
26	08	72	0453										
			0455										
			0500										
			0502										
			0504										
			0515										
			0530										
			0545										
			0600										
			0615										
			0617										
			0619										
			0625										
			0628										
			0630										
			0645										
			0700										
			0715										
			0720										
			0722										
			0729										
			0731										
			0745										
			0800										
			0815										
			0816										
			0820										
			0830										
			0845										
			0900										

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS: x	y	Comments
		—					36487.6	49013.7	~~Pos.~~ c/c to 055°T
		—					36485.9	49013.7	s/o 055°T
		—					36478.7	49013.7	Position
		—					36475.5	49013.6	c/c to 145
		—					36473.8	49013.7	s/o 145°
		—					36473.3	49015.3	Position ck
		—					36474.9	49017.7	Position ck
		—					36475.3	49020.2	Position ck
		—					36475.1	49023.2	Position ck
		—					36473.8	49026.2	" "
		—					36473.5	49026.8	c/c to 055°T
		—					36471.5	49027.0	s/o 055°T
		—					36462.9	49027.1	c/c to 325°T
		—					36461.0	49026.8	s/o 325°T
		—					36460.9	49026.5	Position
		—					36462.3	49024.3	"
		—					36462.6	49022.0	"
		—					36461.6	49019.9	"
		—					36461.5	49019.1	c/c to 055°T
		—					36459.6	49018.9	s/o 055°T
		—					36451.0	49019.0	c/c 145°T
		—					36449.2	49019.1	s/o 145°T
		—					36450.2	49021.4	Position
		—					36449.0	49024.0	Position ck.
							36449.9	49026.4	Position ck.
							36450.2	49027.7	c/c to 263°T
							36452.8	49027.5	s/o 263°T
							36461.8	49026.6	Position ck.
							36478.5	49025.0	Pos. ✓
							36498.1	49023.7	Pos. ck.

GMT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
26	08	72	0916						.		.		
			0930						.		.		
			0915						.		.		
			0942						.		.		
			0945						.		.		
			0000						.		.		
			1015						.		.		
			1030						.		.		
			1043						.		.		
			1044						.		.		
			1045						.		.		
			1100						.		.		
			1115						.		.		
			1130						.		.		
			1145						.		.		
			1200						.		.		
			1215						.		.		
			1228						.		.		
			1230						.		.		
			1245						.		.		
			1300						.		.		
			1315						.		.		
			1330						.		.		
			1345						.		.		
			1400						.		.		
			1415						.		.		
			1430						.		.		
			1445						.		.		
			1500						.		.		
			1506						.		.		

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
							36512.7	49022.9	finish survey 9, slowing down disconnect airgun
							36520.2	49022.8	Position ck airgun on 120 in³
							36516.9	48022.7	Position ck ~~18~~
							36511.1	49022.6	sonibouy overbd. #9A
							36508.3	49022.5	Position ck.
							36492.5	49022.6	Pos. ✓
							36476.2	49022.7	Pos. ✓
							36460.0	49022.7	Pos. ✓
							36445.7	49022.6	end sonabuoy
							36445.6	49022.7	084°T c/c
							36443.5	49022.5	Pos. ✓
							36428.6	49023.9	Pos. ✓
							36413.4	49025.2	Pos. ✓
							36398.5	49026.5	Pos. ✓
							36383.3	49027.8	Pos. ✓
							36367.0	49028.8	Position
							36350.8	49,029.8	Position
							36336.2	49,030.6	Uniboom record off ~2 min
							36,333.7	49,030.7	Position
							36,316.5	49,031.6	Position
							36,298.2	49,032.6	Position
							36,279.6	49,033.7	Position
							36,259.7	49,034.9	Position
							36,239.0	49,036.1	Position
							36,218.9	49,037.6	Position ✓
							36,198.5	49,039.0	Position
							36,177.8	49,040.6	Position
							36,157.6	49,042.1	Position
							36,137.3	49,043.7	Position
							36,128.3	49,044.3	S/O sonobuoy run

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION							
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
26	08	72	1509										
			1515										
			1530										
			1542										
			1545										
			1546										
			1600										
			1607										
			1608										
			1612										
			1630										
			1636										
			1645										
			1700										
			1715										
			1730										
			1745										
			1800										
			1815										
			1830										
			1845										
			1900										
			1915										
			1930										
			1945										
			2000										
			2015										
			2030										
			2045										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
✓	✓	✓					36,123.3	49,044.6	sonobuoy overboard
✓	✓	✓							Site Survey begun 11-14
—							36,115.3	49,045.1	Position
—							36,092.5	49,046.4	Position
—									End seismic tape # 22
—							36,070.3	49,047.9	POSITION
—									START SEISMIC TAPE # 23
—							36047.6	49049.4	Position ck
—									c/c to 325
			✓				~~360~~	~~490~~	Air gun off ship slow END SONO
			✓				36032.7	49050.1	S/O 325 Uniboom cleared
			✓				36032.1	49049.2	Position ck
—							36032.3	49048.8	all systems go, Begin CSP sites 11-14
—							36033.5	49047.8	Position ✓
—							36033.4	49045.7	" ✓
—							36033.8	49043.5	" ✓
—							36033.8	49041.2	" ✓
—							36033.6	49039.1	Position ✓
—							36033.6	49038.0	Position ✓
—							36033.4	49035.0	Position ✓
—							36032.5	49033.0	Position ✓
—							36033.0	49031.0	Position ✓
—							36033.8	49029.1	Position ✓
—							36034.1	49027.2	Position ✓
—							36033.9	49025.2	Position ✓
—							36034.5	49023.4	" ✓
							36033.4	49021.6	Pos. ✓
							36033.8	49019.3	Pos. ✓
							36034.1	49017.4	Pos. ✓
							36034.1	49015.4	Pos. ✓

GMT DAY	GMT MO	GMT YR	GMT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
26	08	72	2049		c/c				.		.		
			2100						.		.		
			2113		c/c				.		.		
			2116		c/c				.		.		
			2130						.		.		
			2145						.		.		
			2200						.		.		
			2215						.		.		
			2230						.		.		
			2245						.		.		
			2300						.		.		
			2315						.		.		
			2330						.		.		
			2345						.		.		
27	08	72	0000						.		.		
			0015						.		.		
			0030						.		.		
			0045						.		.		
			0100						.		.		
			0112						.		.		
			0116						.		.		
			0128						.		.		
			0131						.		.		
			0145						.		.		
			0200						.		.		
			0215						.		.		
			0230						.		.		
			0245						.		.		
			0300						.		.		
			0315						.		.		

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)			COMMENTS AND OBSERVATIONS
	360 33.5	49014.7	c/c to 230°T
	360432	490145	Pos. ✓
	360605	490144	c/c to 145°T
	360617	490145	s/o 145°T
	360617	490156	Pos. ✓
	360627	490170	Pos. ✓
	360618	490184	Pos. ✓
	360620	490203	Pos. ✓
	360624	490223	Pos. ✓
	360623	490244	Pos. ✓
	360624	490268	Pos. ✓
	360624	490294	Position check
	360614	490316	Pos. ✓
	360620	490338	Pos. ✓
	36,062.7	49,036.4	Position
	36,062.9	49,039.0	Position
	36,062.8	49,041.7	Position
	36,061.7	49,044.6	Position
	36,061.5	49,047.3	Position
	36,062.0	49,050.0	Course Change
	36,066.8	49,050.3	Position
	36,076.2	49,049.8	Steady on
	36,076.8	49,049.3	Position
	36,076.6	49,046.7	Position
	36,076.7	49,043.9	Position
	36,077.0	49,041.0	Position
	36,077.2	49,038.1	Position
	36,076.8	49,035.3	Position
	36,076.6	49,032.5	Position
	36,076.9	49,029.9	Position

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES		LONGITUDE ± DEGREES ± MINUTES		TYPE	QUAL.
27	08	72	0330					.		.			
			0345					.		.			
			0400					.		.			
			0415					.		.			
			0430					.		.			
			0445					.		.			
			0445					.		.			
			0446					.		.			
			0453					.		.			
			0455					.		.			
			0500					.		.			
			0503					.		.			
			0515					.		.			
0532 →			0530					.		.			
			0545					.		.			
			0600					.		.			
			0615					.		.			
			0630					.		.			
			0645					.		.			
			0700					.		.			
			0715					.		.			
			0730					.		.			
			0745					.		.			
			0748					.		.			
			0753					.		.			
			0755					.		.			
			0800					.		.			
			0815					.		.			
			0830					.		.			
			0845					.		.			

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
		—	—				36,077.1	49,027.2	Position
		—	—				36,076.7	49,024.6	Position
		—	—				36,076.9	49,022.5	Position
		—	—				36,076.4	49,020.1	"
		—	—				36077.2	49,0183	Position
		—	—				36078.0	49016.7	Position
		—	—				"	"	S/L 235°T starting turn
		—	—				36089.4	49016.8	[redacted] S/L 235°T
		—	—				36088.6	49016.8	C/L 145°T [redacted]
		—	—				36089.7	49016.9	S/L 145°T
		—	—				36089.7	49017.6	Position ✓ Tape 24 off
		—	—						Tape 25 Begin
		—	—				36090.3	49019.9	Position ✓
		—	—				36088.9	49022.2	" Uniboom down 0532
		—	—				36088.7	49024.6	" " "
		—	—				36088.8	49027.1	" " "
		—	—				36086.2	49029.8	" " "
		—	—				36088.1	49032.8	" " "
		—	—				36090.2	49035.8	" " "
		—	—				36090.4	49039.2	" " "
		—	—				36090.3	49042.5	" " "
		—	—				36090.9	49046.2	" " "
		—	—				36090.4	49049.7	C/L 240°T "
		—	—				36093.0	49050.1	S/L 240°T
		—	—				36101.0	49050.3	C/L 325°T
		—	—				36103.4	49050.1	S/L 325°T
		—	—				36103.4	49049.3	Position ✓
		—	—				36103.0	49046.5	Position ch.
		—	—				36102.3	49043.9	Pos. ✓
		—	—				36102.5	49041.2	

GMT DAY	GMT MO	GMT YR	GMT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
27	8	72	0900						.		.		
			0915						.		.		
			0930						.		.		
			0945						.		.		
			1000						.		.		
			1017						.		.		
			1033						.		.		
			1047						.		.		
			1058						.		.		
			1100						.		.		
			1102						.		.		
			1115						.		.		
			1130						.		.		
			1145						.		.		
			1153						.		.		
			1200						.		.		
			1217						.		.		
			1230						.		.		
			1245						.		.		
			1300						.		.		
			1315						.		.		
			1330						.		.		
			1345						.		.		
			1402						.		.		
			1417						.		.		
			1430						.		.		
			1446						.		.		
			~~1500~~						.		.		
			1500						.		.		
			1515						.		.		

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.			COMMENTS AND OBSERVATIONS
		✓	✓				36102.6	49038.4	
							36102.2	49035.8	
							36102.6	49033.4	
							36102.5	49031.1	
							36101.7	49028.7	
							36102.0	49026.2	
							36102.0	49023.8	
							36101.2	49021.8	
							36101.6	49020.3	c/c to 232°T
							36102.0	49020.1	
							36104.2	49019.9	s/o 232°
							36123.6	49020.0	
							36144.6	49020.0	
							36167.3	49020.0	
									Uniboom back on line
							36,188.0	49,020.0	POSITION
							36,212.2	49,020.2	Position
							36,229.8	49,020.0	Position
							36,249.7	49,020.0	Position
							36,270.9	49,020.0	Position
							36,293.1	49,019.9	Position
							36,315.1	49,019.9	Position
							36,336.1	49,019.9	Position
							36,359.9	49,019.8	Position
							36,381.0	49,019.7	Position
							36,399.3	49,019.6	Position
							36,421.6	49,019.8	Position
							~~36,439.2~~	~~49,019.9~~	~~Position~~ Disregard: clock off
							36,446.2	49,019.9	Position
							36,466.0	49,019.9	Position

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
27	08	72	1530	8DT							
			1545								
			1601								
			1615								
			1630								
			1645								
			1700								
			1715								
			1730								
			1745								
			1800								
			1815								
			1821								
			1823								
			1830								
			1845								
			1900								
			1915								
			1920								
			1922								
			1930								
			1945								
			2000								
			2015								
			2030								
			2035								
			2045								
			2052								
			2100								
			2102								

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS X	Y	
	—						36,483.5	49,019.9	Position
	—						36,500.9	49,014.4	Position
	—						36518.1	49020.0	Position
	—						36533.8	49020.3	Position
	—						36549.8	49020.6	Position
	—						36565.8	49021.0	"
	—						36580.9	49020.6	"
	—						36,596.5	49020.1	Position ✓
	—						36613.5	49020.1	"
	—						36631.4	49020.0	"
	—						36650.3	49019.8	"
	—						36670.5	49019.7	"
	—								Off Reel #26
	—								Start Reel #27
	—						36689.5	49019.8	Position ck.
	—						36709.0	49019.8	"
	—						36727.8	49019.7	" ✓
	—						36746.2	49019.7	" ✓
	—						36753.0	49019.9	4/6 to 145
	—						36754.3	49020.1	3/0 to 145
	—						36753.6	49021.2	Position ✓
	—						36753.5	49024.2	" ✓
	—						36753.6	49027.6	" ✓
	—						36754.3	49031.0	" ✓
	—						36755.1	49034.7	" ✓
									possible maneuvering ahead
	—						36755.5	49038.2	Position check
	—						36760.7	49039.1	~~maneuvering~~ maneuvering to avoid traffic
	—						36754.6	49039.8	S1 + 10u. pos. ✓
							36753.7	49040.2	slowing

GMT DAY	GMT MO	GMT YR	GMT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
27	8	72	2115										
			2130										
			2134										
			2145										
			2206										
			2215										
			2230										
			2245										
			2300										
			2315										
			2318										
			2330										
			2335										
			2341										
			2345										
28	08	72	0000										
			0015										
			0019										
			0030										
			0045										
			0047										
			0049										
			0051										
			0051										
			0053										
			0100										
			0109										
			0115										
			0122										
			0123										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
							36757.6	49042.0	Position check
							36762.0	49043.6	" ✓
							36761.1	49042.2	" ✓ turning N. to avoid traffic
							36748.9	49040.2	" ✓
							36742.3	49036.2	" ✓
							36742.6	49032.1	" ✓
							36744.2	49029.5	" ✓
							36746.9	49027.0	" ✓
							36746.2	49023.6	" ✓
							36746.5	49020.6	" ✓
							36746.6	49019.9	at 234°T c/c at 2316
							36760.8	49019.9	Position check
							36767.7	49019.9	145°T c/c
							36766.8	49020.9	s/o 145°T
							36766.5	49021.4	Position check
							36766.7	49023.9	" ✓
							36768.1	49026.6	Position
							36,768.5	49,027.2	c/c due to heavy traffic ahead
							36,771.5	49,028.8	Position
							36,774.2	49,031.8	Position
									Tape #27 End
									Tape #28 Begin
							36,775.2	49,033.2	Course Change
									Air gun off
							36779.4	49,033.3	Steady on 237° T
							36784.8	49,033.1	Position
									temporary slow speed
							36,798.8	49,032.6	Position
									Resume speed
							36,804.2	49,032.4	120" air gun on

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION					
								LATITUDE		LONGITUDE		
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	± DEGREES	± MINUTES	± DEGREES	± MINUTES	TYPE	QUAL.
28	08	72	0130	EDT					.		.		
			0139						.		.		
			0145						.		.		
			0200						.		.		
			0215						.		.		
			0230						.		.		
			0240						.		.		
			0245						.		.		
			0300						.		.		
			0305						.		.		
			0307						.		.		
			0315						.		.		
			0330						.		.		
			0345						.		.		
			0400						.		.		
			0415						.		.		
			0430						.		.		
			0445						.		.		
			0500						.		.		
			0515						.		.		
			0530						.		.		
			0545						.		.		
			0548						.		.		
			0551						.		.		
			0600						.		.		
			0615						.		.		
			0630						.		.		
			0645						.		.		
			0700						.		.		
			0713						.		.		

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Y	COMMENTS AND OBSERVATIONS
	36,811.5	49,032.5	
	36,823.2	49,032.5	sonobuoy over
	36,828.9	49,032.7	Position
	36,845.4	49,033.5	Position
	36,862.5	49,034.2	Position
	36,877.5	49,034.5	Position
	36,887.9	49,034.3	Sonobuoy run concluded
	36,892.9	49,034.3	Position
	36,898.6	49,033.6	Position
	36,899.5	49,033.5	Resume speed
	36,901.0	49,033.5	40" airgun on
	36,906.7	49,034.0	Position
	36,921.1	49,035.6	Position
	36,933.5	49,036.8	Position
	36946.8	49,038.5	Position
	36964.8	49040.5	Position
	36977.0	49042.7	"
	36993.0	49045.1	"
	37007.7	49047.6	"
	37025.0	49050.1	"
	37042.8	49052.5	"
	37061.6	49054.2	"
	37065.5	49054.5	C/L to 325°T
	37067.8	49054.0	S/U 325°T
	37068.3	49051.5	Position
	37067.3	49046.9	"
	37068.0	49042.0	"
	37067.8	49037.3	"
	37068.0	49032.6	"
			End of Reel #38

GMT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
28	08	72	0715										
			0719										
			0730										
			0745										
			0755										
			0758										
			0800										
			0803										
			0815										
			0820										
			0823										
			0830										
			0838										
			0845										
			0900										
			0915										
			0930										
			0945										
			1000										
			1015										
			1016										
			1030										
			1035										
			1045										
			1100										
			1115										
			1130										
			1145										
			1200										
			1215										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS Comments
	—						370680	49028.0	Position ok
	—						~~37067.6~~	~~49024.0~~	Tape 29 ON & running
	—						37067.6	49024.0	Position ✓
	—						37068.6	49020.2	" ✓
	—						37069.3	49017.6	235°T c/c
	—						37071.5	49017.2	s/o
	—						370733	49017.5	Position check
	—						370804	49017.5	145° c/c
	—						37083.6	49018.5	Position check
									s/o 145° T
	—						370740	49010.2	reading soon after 0820 s/o } off
	—						37072.8	49011.4	Position ✓
	—						37082.4	49023.0	Position ✓
	—						37082.2	49024.1	" ✓
	—						37082.1	49027.2	" ✓
	—						37077.8	49030.5	" ✓
	—						370765	49034.1	" ✓
	—						37076.5	49038.0	" ✓
	—						37077.6	49041.7	" ✓
	—						37079.5	49045.4	" ✓
	—						~~37090.3~~	~~49047.3~~	c/c to 240°T
	—						37091.3	49047.3	
	—						37093.8	49045.9	s/o 325T
	—						37089.9	49042.6	Position ✓
	—						37089.8	49037.3	" ✓
	—						37091.8	49032.9	" ✓
	—						37092.0	49028.8	" ✓
	—						37092.8	49025.0	" ✓
							37092.9	49021.4	Position
							37092.7	49017.8	Position

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
28	08	72	1230	EDT									
			1235										
			1245										
			1257										
			1300										
			1315										
			1330										
			1342										
			1345										
			1345										
			1400										
			1414										
			1430										
			1445										
			1500										
			1515										
			1517										
			1530										
			1540										
			1545										
			1600										
			1616										
			1630										
			1645										
			1700										
			1715										
			1730										
			1745										
			1800										
			1808										
			1812										

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
							37,092.9	49,014.9	Position
							37,092.8	49,013.8	Course change
							37,099.3	49,013.3	Position
							37,104.0	49,014.4	Steady on 145° T
							37,104.5	49,014.8	Position
							37,105.3	49,017.4	Position
							37,105.9	49,020.3	Position End Tape #29
							37,105.7	49,023.7	Position
									Start tape #30
							37,105.5	49,027.6	POSITION
							37,105.4	49,031.0	Position
							37,105.9	49,035.5	Position
							37,105.6	49,039.8	Position
							37,105.9	49,044.3	Position
							37,104.7	49,049.7	Position
							37,~~105.8~~ 106.1	49,~~040.3~~ 050.4	C/C
							37,118.2	49,051.6	Position
							37,119.6	49,049.1	C/C
							37,119.7	49,047.8	Position
							37119.4	49043.7	"
							37119.1	49039.8	"
							37119.9	49036.7	"
							37118.9	49033.1	"
							37118.9	49029.3	"
							37119.4	49025.8	"
							37119.2	49022.3	"
							37120.0	49019.3	"
							37119.3	49016.6	" New roll in Uniboom recorder
							37119.5	49015.0	UniBoom ON.
							37118.6	49014.4	C/C 235°

GMT DAY	GMT MO	GMT YR	GMT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
28	08	72	1814										
			1823										
			1825										
			1830										
			1845										
			1900										
			1906										
			1910										
			1913										
			1915										
			1930										
			1945										
			1954										
			1957										
			2000										
			2015										
			2030										
			2050										
			2100										
			2108										
			2115										
			2130										
			2150										
			2200					41	30.2		69 08.5	LA	
			2200					41	30.2		69 09.0	LC	
			2215										
			2230										
			2245										
			2300					41	29.3	69	17.2	LA	
			2315					41	28.6	69	18.7	LC	

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS		Comments
		—					37120.7	49014.2	S/O 235°T
		—					37130.7	49012.6?	C/C to 145°T
		—					~~[illegible]~~	~~4901~~	S/O 145°T Navigation out
		—					37132.6	49015.4	Position Lonan "C" OK.
		—					37131.8	49018.1	"
		—					37131.6	49020.8	"
		—					37131.6	49021.9	C/C 230°T UNIBOOM off
		—					37133.5	49022.3	S/O 220?°T
		—					37134.7	49022.5	C/C 145°T
		—					37135.6	49022.9	S/O 145°T
		—					37134.6	49026.0	Position
		—					37132.3	49029.6	Position
		—					37130.5	49032.6	C/C 260°T
		—					37123.4	49032.9	S/O 260°T
		—					37135.8	49032.8	Position
		—					37157.9	49031.1	Position
		—					37179.5	49034.2	Position
		—					37207.1	49036.9	" ✓ S-2 → 49026.2
		—					37219.3	49035.9	" ✓
		—					37230.3	49025.0	Bridge "L" C
		—					37237.7	49024.2	Position check
		—					37256.6	49032.5	Position check
							37283.0	49020.1	
							37295.6	49018.7	Position check
							37914.3	69981.8?	No signal S2
							37332.6	~~69988.3~~?	" " "
							37351.6	69995.2	
							37368.2	69992.4	
							37383.6	69988.7	2315 Time

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION							
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
28	8	72	2332										
			2345										
29	08	72	0000										
			0015										
			0030										
			0046										
			0114										
			0154										
			0232										
			0240										
			0300										
			0315										
			0330										
			0345										
			0400										
			0415										
			0418										
			0430										
			0500										
			0515										
			0530										
			0545										
			0600										
			0615										
			0630										
			0646										
			0700										
			0704										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.			COMMENTS AND OBSERVATIONS
	✓	✓	✓				37402.2	69984.1	Position ✓
	✓✓		✓✓				37416.4	69980.9	Position ✓
							37,428.6	69,974.5	Position
							37,444.0	69,971.1	Position
							37,465.5	69,970.6	Position
							37,486.7	69,970.4	Position
							37,502.3	69,969.6	Position
									mag, hydrophone cable, airgun on board
							37,560.2	69,972.9	Position
									Airgun resume operation
							37,626.2	69,963.0	Position Knocked down Dana-crew
							37,656.2	69,960.6	Position check with Nav buoy-reading
							37,680.5	69,957.5	Position 10 usec two high-check
							37,690.4	69,950.5	Position paper punch.
							37,699.7	69,943.3	Position
							37,718.7	69,937.8	Position
							37,940.9	69,933.3	" Tape 31 off
							~~37761.7~~	~~69928.9~~	Begin Tape 32
							37761.7	69928.9	Position
							37801.4	69918.1	"
							37820.6	69912.1	"
							37841.2	69906.1	"
							37861.8	69901.0	"
							69894.5	37871.8	"
							37900.3	69887.6	"
							37915.1	69878.2	"
							37926.6	69872.7	"
							37932.3	69858.6	" Bad Fix Nobska Pt.
							37941.3	69859.0	" Bad Fix

GMT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
29	08	72	0715						.		.		
			0730						.		.		
			0745						.		.		
			0800						.		.		
			0815						.		.		
			0820						.		.		
			0833						.		.		
			0835						.		.		
			0845						.		.		
			0906						.		.		
			0915						.		.		
			0930						.		.		
			0945						.		.		
			1000						.		.		
			0956						.		.		
			1015						.		.		
			1030						.		.		
			1045						.		.		
			1100						.		.		
			1115						.		.		
			1130						.		.		
			1135						.		.		
			1152						.		.		
			1200						.		.		
			1201						.		.		
			1215						.		.		
			1230						.		.		
			1245						.		.		
			1300						.		.		
			1315						.		.		

OPS							COMMENTS AND OBSERVATIONS		
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Z	Comments
							37964.8	69859.7	Position
							37994.8	69861.2	"
							38023.4	69863.0	" S-1 Possibly 30 low at Quiks Hole
							38049.6	69864.5	" " " "
							38[illegible]841	698[illegible]38	173°T c/c 187°T c/c correction
							38[illegible]84[illegible]	69[illegible]43[illegible]	173°T s/o 187°T s/o
							38,~~188~~	~~722~~	underway, resumed speed
							~~38~~ 18.8	69872.2	Uniboom ~~Sonobuoy~~ on
							38123.3	69875.2	Position check
							69894.8	38137.2	Position check
							38144.1	69898.6	" ✓
							38159.2	69905.4	" ✓
							38176.6	69912.1	" ✓
							38189.7	69918.8	" ✓
							38185.5	69916.3	c/c to 133°T
							38196.5	69920.1	Position check
							38193.3	69935.3	" ✓
							38189.7	69944.0	" ✓
							38185.3	69952.8	" ✓
							38180.7	69961.8	" ✓
							38177.3	69970.5 ?	" ✓
							38176.3	69973.2	" ✓
							38172.8	69984.0	c/c to 323°T
							38,171.2	69,981.4	Position
							38,171.7	69,980.4	323° T steady on
							38,175.6	69,972.3	Position
							38,179.8	69,962.8	Position
							38,183.7	69,953.3	Position
							38,184.1	69,943.8	Position
							38,184.5	69,933.7	Position

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
29	08	72	1330	EDT							
			1345								
			1400								
			1415								
			1430								
			1445								
			1500								
			1509								
			1515								
			1530								
			1545								
			1600								
			1613								
			1615								
			1630								
			1646								
			1700								
			1713								
			1715								
			1718								

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO	STA.	COMMENTS AND OBSERVATIONS X	Y	
							38,182.8	69,924.1	Position
							38,181.2	69,914.3	Position
							38,179.5	69,904.4	Position
							38,177.6	69,894.4	Position
							38,175.6	69,884.5	Position
							38,174.2	69,875.0	Position
							38,173.2	69,865.2	Position
							38,172.5	69,859.7	C/C to 000° heading up Buzzards Bay
							38,164.6	69,856.0	Position
							38,148.4	69,848.4	Position
	—						38,129.4	69,843.2	Position
	—						38108.6	69842.4	Position
	—								C/C to Quickes hole [redacted]
	—						38090.4	69844.8	Position
	—						38072.8	69849.4	"
							38056.5	69854.5	" Quicks hole
							38064.8	69861.3	" "
									Tape 33 off
							38061.4	69866.7	Position
									END of SURVEY Leg III

ARRIVE WHOI

	31110	ON HAND 7/18/72
	26610	ON HAND 7/27/72
(1)	4500	USED (HALF WAY THRU LEG #1)
	26610	ON HAND 7/27/72
	21845	ON HAND 8/2/72 (END LEG #1)
(2)	4765	USED (SECOND HALF LEG #1)
	21845	ON HAND END LEG #1
	15000	REC'D 8/2/72
	36845	ON HAND BEGINNING LEG #2
	28640	ON HAND END LEG #2
(3)	8205	USED LEG #2
	28640	ON HAND LEG #3 (START)
	20410	ON HAND END LEG #3 / END CONTRACT
(4)	8230	USED LEG #3

(1)	4500
(2)	4765
(3)	8205
(4)	8230
	25,700 TOTAL CONSUMED
	15,000 REC'D
	10,700 YOU OWE US