HUNT 02

NAVIGATION AND SCIENTIFIC LOG

USGS OCS CRUISE LEG II

4 - 14 AUGUST 1972

R/V F.V. HUNT 02

USGS
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BOTTOM GRAVITY METER (L&R)
CSP (~~40~~ 120 in³ Air gun)
Sonobuoys
Magnetometer
3.5 kHz (Uniboom)
LORAN C NAVIGATION

72004 HUNT 002 100949

NOTE: NAVIGATION FOR THIS CRUISE EMPLOYED AN EPSCO LORAN C UNIT WHICH RECEIVED 2 CHANNELS OF LORAN C TRANSMISSIONS, AND READ OUT DELAY TIMES. DELAY TIMES, AS NAVIGATIONAL COORDINATES, ARE NOTED IN THIS LOG, WITH OCCASIONAL LAT-LON POSITIONS AS PICKED FROM CHART USC&GS 71 (SPECIAL PURPOSE, LORAN ~~C~~ C OVERPRINT) JUNE 1971 OBTAINED THROUGH THE COAST GUARD. C&GS 71 CHARTS ARE NOT NORMALLY OBTAINABLE WITH LORAN C OVERPRINT.

AT IRREGULAR INTERVALS THE LORAN C POSITIONS ERR — MOST FREQUENTLY IN THE FORM OF 10 μsec JUMPS. NOTATIONS ABOUT "LIGHTS ON" OR "+10" REFER TO INDICATOR LIGHTS ON THE LORAN C UNIT, ~~AND~~ BUT USUALLY DO NOT SIGNIFY ERRORS IN THE RECORDED POSITIONS. SEVERAL ~~ERROR~~ ERRONEOUS SEQUENCES OF POSITIONS ARE NOTED IN THIS LOG. PLOT POSITIONS IN CONTEXT TO DETECT ERRORS.

JR, SEP 1972

U.S.G.S. OCS Cruise [redacted] II Gravity

[redacted] EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
04	08	72	0710								
	STA 1		0720		Bridge		Fix	✓41° 43. 6'	68° 51. 9'		
			[redacted]								
	STA 1A		0757								
			0805								
			0830								
			0900								
			0930								
			1000					41° 41. 85'	68 50. 5		
			1030								
			1100								
			1239								
			1256								
			1302								
			1309					✓41° 39. 4'N	68° 49. 0'W		
04	08	72	1315					41° 39. 9'N	68° 49. 2'W		
			1319								
			1329								
			1331								
			1358								
			1404					✓41° 38. 9'N	68° 48. 9'W		
			1412								
			1417								
			1457								
			1503					✓ [redacted] WRONG			
			1507					[redacted] 41° 38. 3'N	68° 47. 7'W		
04	08	72	1518								

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS: Comments
				✓			37,112	49,012.8	MASTER OUT
							~~37,077.0~~	~~49,012.6~~	~~meter in water~~
						ST. 1A	37,077.0	49,012.6	METER IN WATER
							37,075.9	49,013.0	ON BOTTOM
							37,074.2	49,013.7	
							37,076.4	49,015.6	
							37,073.1	49,016.0	
								49,016.7	
							37,073.1		
									underway to station #2
						STA #2	37,087.9	49,021.4	on station #2
							37,088.9	49,021.5	meter in water #2
							37,089.7	49,021.6	meter on bottom #2
							37,090.4	49,021.8	meter on bottom second time #2
							37,090.7	49,021.8	readings obtained #2
							37,091.3	49,022.0	meter aboard #2
									underway to station #2
						STA #3	37,085.7	49,029.7	meter in water #3
							37,086.3	49,029.7	meter on bottom #3
							37087.0	49 024.7	surface #3
									meter on deck
						STA #4			meter in water #4
							37,086.0	99	
							37,086.5	99,025.9	meter on bottom #4
							37,086.7	99,025.8	readings taken #4
							37,087.2	99,026.7	meter on board #4

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
09	08	72	1520					✓ 41° 37.1	N 68° 46.9		
			1535								
			1540								
			1544								
			1550								
			1551								
			[redacted]								
			1627								
			1631								
			1635					✓ 41° 36.2'	68° 46.4'		
			1646								
			1712								
09	08	72	1712								
			1716					✓ 41° 35.3'	68° 45.0'		
			1722								
			1723								
			1735								
			1757								
			1800								
			1803								
			1808								
			1811					✓ 41° 34.0'	68° 44.8'		
			1829								
09	08	72	1835								
			1917								
			1925								
			1946								

Loran "C" Nav.

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
							~~37,086.4~~	~~49,028.0~~	underway to station #5
							37,086.4	49,028.0	on Station #5
							37,086.7	49,028.0	meter in water #5
							37,086.7	49,028.0	meter on bottom, #5
							37,086.5	49,028.1	meter head, #5
									underway to stat. #6
							~~37,087.~~		
							37,087.7	49,030.5	IN WATER #6
							37,088.3	49,030.5	ON BOTTOM #6 -10 m.sec. S1
							37,088.6	49,030.5	METER READING #6 -10 m.sec. S1
							37,089.1	49,030.6	out of water #6 -10 m.sec. S1
									UNDERWAY TO STA. #7
									ON STA. #7
							37,086.2	49,033.2	IN WATER #7 +10 m.sec. S1
							37,085.8	49,033.3	ON BOTTOM #7 +10 m.sec. S1
							37,086.0	49,033.1	METER READING #7 +10 m.sec. S1
							37,086.2	49,033.2	O.K. with L "C" ie. was light
							37,086.6	49,033.3	underway to STA. #8
							37088.2	49036.5	ON STA. #8
							37088.5	49036.3	in WATER #8
							37,088.6	49,036.3	ON BOTTOM #8
									METER TILTED, WAS RE-RAISED
									AND RE-LOWERED
							37,088.5 -10 msec	49,036.4	ON BOTTOM #8 -10 msec S-1
							37,089.9	49,036.5	METER READING #8
									UNDERWAY TO STA. #9
							37,087.0	42,042.6	ON STA. #9
									APPARENT FLOODED METER,
									METER BEING RAISED
							37,093.5	49,043.5	METER O.K., IN WATER #9
									± 10 msec

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
04	08	72	2123	EDT							
			2126								
			2141				✓	~~4~~ 41°32.8'	68°41.6'		
			2200								
			2223								
			~~2230~~ 2235				✓	41 29.6	68 38.7		
			2250								
			2253								
			2327								
			2330								
			2332								
			2335				✓	41 26.1	68 35.6		
			2348								
05	08	72	0003								
			0008								
			0010								
			0015				✓	41°25.8'N	68°35.0'		
			0020								
			0031								
			0100								
			0105								
			0110								
			0116				✓	41°23.3'N	68°33.3'W		
			0122								
			0123								
			0138								
			0142								
			0145								
			0149				✓	41°22.5'N	68°31.9'W		
			0158								

LORAN "C" NAVIGATION

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	x	y	COMMENTS AND OBSERVATIONS
				✓			37,081.6	49,042.3	ON STA #9
				✓			37081.7	49,042.4	IN WATER #9
76.0 (fath)							37,082.5	49048.9	? & Reading #9
									underway to #10
				✓			37,081.6	49,053.0	in water #10
62.(fath)							37,082.0	49,053.3	ON BOTTOM #10 & Reading
							37,082.4	49,053.7	out of water
									UNDERWAY to STA. 11
							37,081.2	49,064.8	ON STA #11
							37,080.5	49 064.8	in water
							37,080.2	49,065.0	ON BOTTOM
51.0 fath.							37,080.1	49,065.2	READING METER #11
							37,081.6	49,065.7	UNDERWAY to STA. #12
							37,082.1	49,069.4	
sta 12"							37,082.0	49,069.4	meter in water #12
53 fath							37,082.6	49,069.7	meter on bottom #12
							37,082.9	49,069.8	reading taken #12
							37,083.3	49,070.1	meter aboard #12
									underway to sta #13
49 fath							37,082.8	49,076.2	
							37,083.0	49,076.3	meter in water #13
							37,082.8	49,076.2	meter on bottom #13
							37,083.3	49,076.5	reading taken #13
							37,083.5	49,076.6	meter aboard #13
									underway to sta #14
sta 14							37,083.0	49,083.2	on station #14
42 fath							37,083.2	49,083.3	meter in water #14
							37,083.2	49,083.5	meter on bottom #14
							37,083.8	49,083.1	reading taken #14
							37,083.6	49,083.0	meter aboard #14

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
05	08	72	0159	EDT							
			0236								
			0238								
			0240					✓ 41 9 20.8'N	68° 30.0'W		
			0242					~~41 9 52~~			
			0251								
			0257								
			0258								
			0326								
			0327								
			0331								
			0339					✓ 41° 19 5'N	68° 28 5'W		
			0347								
			0424								
			0427								
			0428								
			0430								
			0435								
			0440								
			0442								
			0444								
			0445								
			0447								
			0452								
			0455								
			~~0501~~								
			~~0502~~								
			0515								

LORAN "C" NAV.

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
									underway to sta #15
									Sta 15
							37,083.3	99,091.3	on sta #15
							37,083.3	99,091.3	90 feet meter in water #15
							37,083.6	99,091.0	meter on bottom #15
							37,083.9	99,091.1	reading taken #15
							37,083.7	99,090.9	meter on deck #15
									underway to sta #16
							37,082.3	99,098.6	on sta #15
							37,082.8	99,098.9	Sta 16 meter in water #16
							37,083.0	99,098.2	36 feet meter on bottom #16
							37,082.9	99,097.9	reading taken #16
							37,082.7	99,097.6	underway to sta #17
							37,086.6	99,105.5	(30 F.) ON STA. #17
							37,086.2	99,105.0	METER IN WATER #17
							37,086.2	99,105.0	METER ON BOTTOM #17
									TILTED AND BEING RESET
									RELOCATING STAT. #17
							37,086.3	99,103.9	METER IN WATER #17
							37,086.6	99,103.9	" ON BOTTOM #17
									TILTED #17
							37,086.3	99,103.4	ON BOTTOM #17
									TILTED #17
							37,085.8	99,103.0	ON BOTTOM #17
									TILTED #17
									LEAVING STATION #17
									NO READING AT #17
									UNDERWAY #18
									ON STA #18
									STILL AT #17

GMT EDT

DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
05	08	72	0523										
			0526										
			0536										
			0655										
			0732				✓ [illegible]	41°	14.0′	68°	23.4′		
			0734										
			0824										
			0824										
			0825				✓	41°	09.6′	68	19.8′		
			0830										
			[illegible]										
			0904										
			0913										
			0915										
			[illegible]										
			0922										
			0924										
			1005										
			1007										
			1014										
			[illegible]										
			1035										
			[illegible]										
			1045										
			1110										
			1112										
			1120										
			1133										
05	08	72	1145										

Southbury #1

LORAN "C"

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Y	COMMENTS AND OBSERVATIONS — COMMENTS
33 Fath.	37,084.0	49,099.9	RELOCATED ALINE-STILL STA. #17
			TILTED - NO READING - ON WAY
~~30 Fath.~~			TO STA. #18
30 Fath.	37,087.4	49,126.5	ON STA. #18
	37,086.2	49,125.8	METER READING #18
	37,086.0	49,125.8	" COMING UP #18
	37,087.9	49,198.1	ON STA. #19
	37087.6	49198.3	IN WATER
22 Fath	37087.6	49,198.3	ON Bottom #19 - Meter reading
	37088.3	49,198.7	coming up
	37087.7	49,198.4	out of water
			start tape #0; 1st Sonobuoy
			Hydrophone line reduced
			to about 50'. Sound
		UNDERWAY	source is 80 cu/in air
		AIR GUN ON	gun run at a 12 sec rep. rate
		~~SONOBUOY in WATER~~	
	37095.2	49151.1	SONOBUOY IN WATER (#1) CH 14
			SONOBUOY ~~#~~ fouled GO BACK TO retrieve it
			[redacted]
		AIR GUN ON	
	37096.8	49154.3	SONOBUOY #1 deployed CH-14
			NO record
			SONOBUOY (#1) ABORTED. leaky hydrophone?
			SONOBUOY (#2) CH 18, #1 CH18 also
	37097.0	49160.3	SONOBUOY (#3) CH 20 deployed
			also winch gear box repaired
			(#3) not receiving? returning to (#3) position
	37098.2	49161.7	c/c to ~~640°T~~ 140°T
			circling sonobuoy
			on NEW course
	37098.8	49163.8	Position Check
	37101.2	49166.6	Position Check
	49169.2	37102.5	Position Check

SONOBUOY #1

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
05	08	72	1200								
			1219								
			1232								
			1247								
			1254								
			—								
			—								
05	08	72	1301								
			1330								
			1345								
			1400								
			1403								
			1409								
			1909								
			1421					✓ 41° 05.3' N	68° 16.0' W		
			~~1424~~								
			1428								
			1430								
			1447								
			1500								
			1513								
			1526								
			1529								
			1537								
			1550								
			1550					✓ 41° 02.3'	68° 12.8'		
			1601								
			1602								
			1651								
			1703								

SOUTH BUOY #1

Loran "C"

29/14T

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS X (master original off temporarily)	Y	comments
							37,104.4?	49,182.8?	position check
							37,089.7	49 177.1	Position check
							37,092.4	49,179.8	Position check
							37 095.3	49182.8	Position check.
							37096.4	49184.2	shut down sonobuoy record -
									pull air gun, prepare to
									return to gravity stations.
							37,097.9	49,185.4	Position check
							37,099.7	49,182.7	OK
							37,091.9	49,177.4	OK
							37,086.0	49,171.9	OK
STA #20							37,088.2	49,172.0	OK on station #20
							37,089.6	49,172.2	meter in WATER
24 fath							37,090.2	49,172.4	meter on Bottom
							37,091.0	49,172.6	reading taken #20
							~~37,091.2~~	~~49,172.7~~	~~meter on deck #20~~
							37,091.0	49,172.5	meter on deck #20
							37,091.1	49,172.9	underway to sta #21
							37,089.5	49,178.4	underway to #21
							37,088.3	49,183.1	" "
							37,087.4	49,188.5	
							37,086.9	49,192.7	on station #21
Sta #21							37,086.7	49,192.5	meter in water #21
27 fath							37,087.4	49,191.8	meter on bottom #21
							37,087.5	49,191.2	meter still on bottom - trouble in servo balance
							37,087.5	49,191.2	reading Taken
									METER ON BOARD, STILL HOLDING #21
									ON WAY TO #22
							37,087.2	49,216.7	O.K.
							37,087.2	49,218.9	O.K.

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
05	08	72	17								
			1713								
			1716								
			1717								
			1718								
			1722								
			1730								
			1741								
			1745								
			1752					✓ 40° 57.6'	68° 08.0'		
			1802								
			1804								
			1815								
			1830								
			1845								
			1908								
			1915					✓ 40° 53.7'	68 03.8'		
			1916								
			1921								
			1939								
			1945								
			2001								
			2005								
			2006								
			2008					✓ 40° 49.2'	68° 00.4'		
			2010								
			2016								
			~~2100~~ 2020								
			2130								
			2205								

LORAN "C"

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Y	COMMENTS AND OBSERVATIONS
~~25~~	37,~~220.0~~	~~49,~~	
25 fath.	37,087.2	49,220.0	O.K. ON STA. #22
	37,086.7	49,219.5	METER IN WATER #22
	37,086.7	49,219.3	" ON BOTTOM #22
	37,	49,	TILTED, BEING RESET
			TILTED AGAIN
	37,086.2	49,218.3	[redacted]
	37085.8	49 217.7	Tilted
	~~37085.4~~	~~217.~~	ATTEMPTING to regain STA 22
	37085.4	49 217.5	ON BOTTOM ; READ
	37,085.0	49,217.2	O.K.
	37,084.9	49,216.9	ON WAY TO STA. #23
	37,083.0	49,221.4	O.K.
	37,087.4	49,230.5	O.K.
	37,087.5	49,238.9	O.K.
29.5F	37,084.5	49,244.6	ON STA. #23
	37,083.7	49,244.2	TAKING READING #23
	37,083.5	49,244.1	COMING UP #23
	37,083.6	49,244.2	METER OUT OF WATER #23
	37,084.4	49,253.7	HEADING TOWARD #24
	37,085.6	49,257.9	O.K.
	37,088.4	49,267.9	O.K.
	37,088 9	49,270.0	ON STA. #[redacted] 24
	37088.9	49,270.2	in water
36 fath.	37089.1	49,270.4	ON Bottom #[redacted] ; read. #24
	37,089.2	49,270.5	Bringing meter up
	37,089.6	49,270.8	UNDERWAY to #25
			repair termination
	37087.8	49318.6	ok. steaming to 25
	37087.1	49323.5	on [redacted] #25 coming up.

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
05	08	72	2212								
			2213								
			2214					✓ 40° 40.8′	67° 52.3′		
			2217								
			2220								
			2333								
			2336					✓ 40° 32.6	67° 45.8′		
			2340								
			2344								
06	08	72	0000								
			0015								
			0030								
			0100								
			0109								
			0112								
			0119								
			0122					✓ 40° 24.6′ N	67° 35.6′ W		
			0135								
			0215								
			0230								
			0245								
			0300								
			0315								
			0330								
			0345								
			0400								
			0416								
			0430								
			0445								
			0450								

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	L. X	Y	COMMENTS AND OBSERVATIONS Comments
				✓			37086.5	49322.7	ON STA #25
45 fath.							37086.8	49328.8	METER IN water
				✓			37087.0	49322.9	ON Bottom #25 + Reading
				✓			37087.2	49323.0	coming up.
							37087.1	49323.2	METER SECURE - UNDERway to 26
				✓			37095.3	49375.3	ON STA #26
				✓			37095.7	49375.7	ON Bottom #26 ; read
							37096.4	49376.0	Starting up.
				✓			37097.0	49376.3	SECURE & UNDERWAY
							37,097.0	49,386.6	position check
							37,095.1	49,397.8	position check
							37,092.1	49,408.1	POSITION CHECK
							37,074.2	49,423.9	POSITION CHECK
STA II							37,079.2	49,428.3	on station # 26 27
27							37,079.0	49,428.3	meter in water # 26 27
99 fath							37,079.0	99,428.3	meter on bottom # 26 27
							37,079.2	99,428.5	reading taken # 27 27
							37,075.1	99,428.5	meter on deck
							37,103.3	99,415.9	POSITION ship checked echo sounder
							37,093.7	49,404.1	POSITION
							37,080.1	49,391.2	POSITION
							37,069.3	99,377.3	"
							37,055.5	99,363.7	"
							37,040.5	49,353.6	"
							37,027.9	49,343.6	"
							37,011.5	49,331.0	"
							36,994.6	49,318.3	"
							36,979.9	49,307.3	"
							36,976.1	49,305.1	KNOCKED HER DOWN 10
							36,965.3	49,304.7	based on BRIDGE L "C"

SLAVE 1

GMT EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
06	08	72	0500								
			0507								
			0510								
			0517								
			0518								
			0530								
			0545								
			0600								
			0615								
			0630								
			0645								
			0700								
			0708								
			0730								
			0800								
			0808								
			0827								
			0847								
			0900								
			0915								
			0930								
			0942								
			0955								
			1045								
			1115								
			1150								
			1206								
			1249								
06	08	72	1300								

RENUMBERED: SONOBUOY # 2

40° 47.8' N 67° 36.0' W

SONOBUOY # 3

LORAN "C"

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	x	y	COMMENTS AND OBSERVATIONS: COMMENTS
							36,963.4	49,303.9	POSITION check
							36,962.4	49,303.1	
									Air gun firing
							36,960.5	49,302.3	
					✓				SONO (4) BUOY IN WATER (#4)
					✓		36,957.6	49,300.9	sonobuoy #4 ←
					✓		36,954.8	49,299.8	call this sonobuoy #2 JR
					✓		36,952.2	49,299.3	POSITION check
					✓		36,949.8	49,298.6	Position check
					✓		36,947.0	49,298.2	Position check
					✓		36,943.9	49,297.9	Position check
					✓		36,940.1	49,297.3	SI 10 HIGH 36940 is correct JR
					✓		36,938.8	49,297.2	
					✓		36,933.2	49,296.7	Bridge estimates current at NNE @ 1 kt.
					✓				
					✓		36,925.3	49,296.1	change tape ON 80# SONO #4 OFF
					✓		36,923.1	99,296.0	ships speed increased
					✓		36913.2	49295.8	SONO buoy #5 in water ch.20
					✓		36900.7	49295.1	position check ok
					✓		36893.0	49294.6	" " ok
							36884.5	49293.9	" " ok.
							36875.5	49292.5	" " ok.
							36868.5	49,291.5	sonobuoy #5 stop. GUN OFF
									steaming to Gravity leg #2
							36788.5	49,295.1	position check ok
							36744.1	49 299.3	Positin check
							36,690.7	49,305.4	" "
							36,669.9	49,307.9	" "
							36,612.0	49,314.6	" "
							36,594.4	49,316.5	" "

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
06	08	72	1315								
			1330								
			1345								
			1400								
			1415								
			1421								
			1425								
			1429								
			1436					✓ 40°48.6'N	66°43.1'W		
			1445								
	1448		~~[illegible]~~								
			1500								
			1516								
			1530								
			(1528)		clock set forward 2 minutes - checked w/ WWV						
			1547								
			15								
			1549								
			1551								
			1559								
			1609								
			1615					~~[illegible]~~ 4	~~[illegible]~~ 2		
			1619					✓ 40°56.4'	66°51.3'		
			1625								
			1625								
			1642								
			1700								
			1715								

Loran "C"

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS: Comments
							36,578.6	49,318.4	position check
							36,558.4	49,320.1	position check
							36,538.9	49,321.7	position check
							36,515.4	49,323.3	position check
							36,508.3	49,327.8	position check
						Sta 28	36,499.3	49,327.7	orientation #28
							36,498.2	49,327.7	meter in water #28
						93 fath	36,498.3	49,327.6 ←	meter on bottom #28
							36,498.6	49,327.5	reading obtained #28
							36,498.8	49,327.4	meter on deck + secured #28
							36,498.8	49,327.9	underway to sta #29
							36,500.0	49,321.5	position
							36,501.8	49,311.7	position check
							36,501.4	49,303.3	position check
								~~49,293.9~~	~~position check~~
							36,501.0	49,292.5	position check
						50 fath	36,501.0	49,290.0	ON STAT. #29
						~~#28~~	36,501.2	49,290.2	IN WATER #29
							36,502.1	49,290.1	ON BOTTOM #29
							36,502.9	49,289.9	Possible meter reading but meter tilted just after.
						THIS IS Correct	36,503.5	49,289.7 ←	METER READING #29
							36,503.7	49,289.7	COMING OUT of water #29
							36,503.9	49,289.6	METER ON DECK #29
									UNDERWAY TO STA. #30
							36,501.7	49,279.3	POSITION check
							36,500.4	49,268.5	POSITION check
							36,499.4	49,260.0	POSITION check

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION						
								LATITUDE		LONGITUDE			
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	± DEGREES	± MINUTES	± DEGREES	± MINUTES	TYPE	QUAL.
06	08	72	1730										
			1745										
			1751					✓ 41°	05.9′	66°	58.4′		
			1759										
			1815										
			1830										
			1845										
			1900										
			1909										
			1911										
			~~1921~~										
			1922					✓ 41°	13.8′	67°	06.2′		
			1929										
			1945										
			2015										
			2036										
			2043										
			2044										
			2046					✓ 41	21.5	67	13.0		
			2047										
			2052										
			2141										
			2208										
			2209										
			2222										
			2223										
			2225					✓ 41	29.4	67	20.8		
			2227										
			2231										
			2213										

LORAN "C"

OPS 12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.	X	Y	COMMENTS AND OBSERVATIONS — COMMENTS
	36,498.1	49,250.1	Position check, ok.
	36,498.0	49,244.0	ON STA, #30 METER IN WATER
34 FATH.	36,498.0	49,243.9	ON BOTTOM & Reading #30
	36,498.0	49,243.6	ON WAY TO #31
	36,496.5	49,235.4	Position check
	36,500.1	49,226.9	Position check
	36,501.4	49,218.1	Position check
	36,501.0	49,209.6	Position check
	36,500.3	49,205.3	COMING ON STA. #31
35 FATH.	36,500.0	49,205.3	ON STA. #31
	~~36,499~~		
	36,499.6	49,204.7	meter READING #31
	36,499.7	49,204.8	UNDERWAY TO #32
	36,501.0	49,199.3	Position check
	36,496.0	49,182.9	Position Check ok.
	36,497.7	49,171.2	[redacted] #32 coming up.
	36,496.9	49,169.8	on sta, in water
27 fath.	36,497.0	49169.8	on Bottom #32
	36,496.9	49169.5	read #32
	36496.7	49169.6	coming up.
	36,496.0	49,169.3	SECURE & UNDERWAY to #33
	36,499.5	49,147.8	Position Check
	36,500.1	49,136.3	ON STA #33
			repair to "AUTO RELEASE Mech."
	36,496.2	49,135.8	in water #33
	36,496.1	49.135.7	ON Bottom
27 fath.	36495.7	49,136.9	reading #33
	36495.6	99136.0	coming up.
	36495.3	49136.0	Secure, UNDERWAY to 34
	36,502.5	49,122.0	position ck ok

[redacted]				TIME ZONE	SHIPS		NAVIGATION							
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
06	08	72	[redacted]	2328									
			2330										
			2332				✓	41°	33.7'	67°	25.0'		
			2337										
			2345										
67	08	72	0002										
			0034										
			0045										
			[redacted]	0058									
			0103										
			[redacted]	0105			✓	41°	38.48'	67°	29.36'		
			0111										
			0115										
			0132										
			[redacted]	0145									
			0148										
			0153										
			0157				✓	41°	42.18'	[redacted]			
			0159							67°	33.06'		
			0218										
			0231										
			0246										
			0252										
			0256										
			0258				✓	41°	45.12'				
			0300							67°	35.42'		
			0303										
			0315										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS COMMENTS
18	X						36,501.0	49,118.0	ON STA, in water #34
							36500.7	49,117.8 ←	on. Bottom
							36500.5	49118.0	Reading
							36500.2	49118.2	coming up.
							36500.3	49118.5	Secure + UNDERWAY to 35
							36,501.0	99,116.2	POSITION
							36,501.0	49,105.2	Position Check
							36,500.5	49,101.7	Position Check
26F							36,500.5	49,098.5	ON STA #35
STA 35							36,500.8	49,098.7	In Water
							36,500.6	49,098.9 ←	Reading #35
							36,501.0	49,099.1	OUT of Water
							36,500.7	49,098.6	Position Check
							36,500.7	49,092.5	" "
							36,500.5	49,087.5	" "
22F							36,500.5	49,087.1	On Station, [redacted]
							36,501.0	49,087.1	In Water
STA 36							36,501.3	49,087.0 ←	Reading #36
							36,501.6	49,087.0	Secure + Underway #37
							36,504.8	49,086.8	Position Check
							36,502.6	49,082.0	Position Check
							36,501.5	49,076.9	Position Check
22F							36,500.4	49,076.8	on Station, in water
STA 37							36,500.4	49,076.9 ←	on Bottom
							36,500.5	49,077.1	Reading #37
							36,500.7	49,077.0	Comming up
							36,501.0	49,077.3	Underway #38
							36,4998	49,074.0	Position Check

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
07	08	72	~~0330~~								
			0330								
			0333								
			0336								
			0337				✓	41° 47' 48"			
			0340						67° 38' 12"		
			0342								
			0400								
			0411								
			0415								
			0442								
			0447				✓	41° 51.4'	67° 42.1'		
			0449								
			0508								
			0516								
			0529								
			0536								
			0545								
			0554				✓	41° 53.8'	67° 43.9'		
			0557								
			0614								
			0619								
			0621								
			0623				✓	41° 55.5'	67° 45.5'		
			0626								
			0632								

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	COMMENTS AND OBSERVATIONS X	Y	Comments
			~~Position Check~~
22F	36,500.4	49,068.3	Position Check
#38	36,500.4	49,068.2	On Station, in water
	36,500.3	49,068.2 ←	On Bottom
	36,500.5	49,068.1	Reading
	36,500.5	49,068.1	Out of Water
	36,500.5	49,068.1	Underway # 39
	36,498.5	49,063.2	Position check
18 Fat.	36,500.4	49,060.0	ON STA. #39
	36,500.8	49,060.0	TILTED
	36,500.9	49,058.7	Position check
	36,501.6	49,058.3 ←	meter reading #39
	36,501.9	49,058.4	meter out of water #39
	36,500.1	49,057.8	HOLDING STATION, TRYING TO
			FIX COMPRESSOR FOR SONO
			BUOY RUN.
	36,498.8	49,056.9	Position Check
			ALSO INFORMED THAT WENCH
			HAS LOST A GEAR.
18 Fath. 18	36,501.1	49,053.5	STA. #40 ARRIVED
	meter location between [illegible]		METER BEING RESET AFTER TILT.
	36,500.7	49,052.6 ←	Position check
	36,499.4	49,052.2	METER OUT OF WATER
	36,498.3	49,052.1	UNDERWAY TO #41
	36,500.2	49,048.2	Position check
22 Fath.	36,499.5	49,047.0	ON STA. #41
	36,499.3	49,047.0 ←	ON WAY DOWN (IN WATER)
	36,499.2	49,046.9	METER READING #41
	36,499.4	49,046.7	METER COMING UP #41
	36,499.3	49,046.9	Position check

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
07	08	72	0635										
			0645										
			0700										
			0703										
			0704										
			0707										
			0714										
			0715					✓	41° 58.3′	67° 47.8′			
			0725										
			0752										
			0754										
			0759					✓	42 00.7	67 50.5			
			0803										
			0822										
			0851										
			0853										
			0857					✓	42 03.4	67 52.1			
			0900										
			0937										
			0941					✓	42 05.7	67 55.2			
			0944										
			1006										
			1009										
			1015										
			31										
			1045										
			1100										
07	08	72	1115										

LORAN "C"

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS: COMMENTS
							36,498.4	49,046.8	METER ON BOARD AND
									UNDERWAY TO #42
							36,495.3	49,044.6	Position check
							36,500.2	49,040.7	position check
							36,499.7	49,040.4	ON STA. #42
(36 FATH.)							36,499.3	49,040.4	METER IN WATER #42
							36,499.1	49,040.3 ←	METER ON BOTTOM #42
							36,498.0	49,040.1	Position check
							36,497.7	49,040.0	METER READING #42
							36,497.3	49,040.1	METER ON DECK, UNDERWAY
									TO #43.
						~	36,501.3	49,034.4	Coming on STA 43
							36,501.5	49,034.5	in water
96 Fath.							36,502.5	49,034.3 ←	on bottom
							36503.5	49034.3	coming up.
							36502.8	49033.5	Secure; UW underway to 44
						~	36500.3	49028.9	on STA #44
							36500.0	49028.4	in water
102 Fath.							36499.9	49028.3 ←	on Bottom #44
							36499.7	49028.3	coming up
						~	36498.1	49023.8	in water #45
118 Fath.							36498.3	49,023.8 ←	on bottom #45
							36498.5	49023.8	coming up
							36493.0	49022.8	UNIBOOM Deployed.
							36490.3	49023.0	UNIBOOM recording
							36,485.7	49,022.7	Position ck. - ok.
							36,470.1	49,022.2	" " "
							36,456.6	49,022.1	" "
							36,443.2	49,022.3	Position check OK
							36,424.3	49022.5	" "

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION					
								LATITUDE	LONGITUDE			
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	± DEGREES ± MINUTES	± DEGREES ± MINUTES	TYPE	QUAL.	
07	08	72	1130									
			1145									
			1200									
			1207									
			1219									
			~~1230~~									
			1230									
			1249				Machine Off					
			~~1315~~		1315		Machine	off	No Signal			
			~~1325~~		1325		Machine	off	No Signal			
			~~1335~~		1335		Reacquire	Loran-C				
			~~1349~~		1349			42° 17.4'	67° 30.5'			
			~~1400~~		1400							
			1415									
			~~1430~~		1430							
07	08	72	1445									
			1500									
			1515									
			1530									
			1545					42° 26.5	67° 18.0			
			1550									
			1554									
			1554									
			1558				NO SIGNAL ON LORAN "C"					
			~~1609~~									
			1613									

1613

LORAN "C"

OPS (12 KHz, 3.5 KHz, CSP, MAG, GRAV., SONO., STA.)	COMMENTS AND OBSERVATIONS X	Y	COMMENTS
	36415.3	49022.1	OK
	~~36408.8~~	~~49022.1~~	"
	~~36414.6~~	~~49022.8~~	bad on X skywave switch on auto
	~~36,362.1~~	~~49,022.9~~	
	~~36,347.1~~	~~49,023.1~~	position reading
	~~36,337.5~~	~~49,023.4~~	" "
	~~36,334.7~~	~~49,023.6~~	position check
	~~36,~~	~~49,~~	~~Position check~~
	Zip	Zip	42° 14'.7 = 67°35'.2
	~~[illegible]~~		Loran A fix from bridge ?
	36,241.5	49,025.3	Position Check
	36,229.9	49,025.3	Position Check
	36,211.9	49,025.3	Position Check
	36,193.3	49,025.2	Position Check
	36,170.8	49,025.1	position OK
	36,149.1	49,025.1	POSITION OK
	36,128.8	49,025.0	POSITION OK
	36,106.6	49,024.9	POSITION OK
	36,084.1	49,024.8	Position Check
	36,074.7	49,024.5	Position check OK
			Air Gun over side
	36,075.8	49,024.5	On course for Sono
			Bouy #4 run.
			Air gun (120) firing TEST
	36,074.4	49,024.7	Reading from bridge
	~~[illegible]~~	~~[illegible]~~	my master is out. L "C".
			~~Sono Buoy #4 now~~
			~~RECORDING~~
	36,067.8	49,025.8	120 PSI Air Gun firing

bad fixes from "C" out Master signal very weak

TAPE #2 Cr. #2

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
07	08	72	1613				RECEIVING LORAN "C"						
			1614					42°	24.5'	67°	15.8'		
			1630										
			1645										
			1700					42°	24.0'	67°	12.0'		
			1715				Soundway #4						
			1730					42°	23.5'	67	09.8'		
			1745										
			1800					42°	23.3'	67°	07.8'		
			1819										
			1814					42°	22.9'	67°	06.5'		
			1824										
			1825										
			1826					42°	22.5'	67°	06.1'		
			1848				Soundway #5						
			1845										
			1900					42°	22.2'	67°	07.9'		
			1915										
			1930										
			1945										
			2006										
			2015										
			2025					42	22.5	67	15.3		
			2045										

LORAN "C"

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS: COMMENTS
							~~36,04[illegible]~~	~~49,[illegible]~~	LORAN "C" NOW WORKING.
							36,067.8	49,025.9	SONO BUOY DEPLOYED #4 IN WATER.
							36,061.0	49,027.0	POSITION check
							36,054.6	49,027.6	POSITION check
							36,047.3	49,028.7	Position check
							36,040.5	49,029.4	Position check
							36,031.8	49,030.5	" "
							36,024.8	49,031.5	Position check
							36,017.6	49,032.2	Position check
							36,012.9	49,033.1	~~TURNING OFF Early #4 WITH UNIBOOM RECORDER~~
							(1809) end Sonobuoy #4		
							36,012.0	49,033.4	C/C 280°T
							36,012.0	49,033.8	Position check
							36,012.6	49,033.9	STEADY ON 280
							36,013.0	49,033.7	SONO BUOY #5 IN WATER AND RECORDING. X INDICATES SONO BUOY #5 ON BOTH MAPS.
							~~36,020.2~~	49,033.7	Position check
							36,020.2	49,033.7	Position check
							36,025.8	49,033.4	Position check
							36,032.4	49,033.1	Position check
							36,043.0	49,032.4	Position check
							36,052.7	49,031.4	Position check
							36,062.2	49030.5	Position check
							36072.1	49029.4	" "
							36079.2	49028.6	All gear pulled
							360870	490273	position ch.

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION								
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
07	08	72	2115					42	21.0	67	13.6		
			2131										
			2146										
			2200										
			2230					42	15.0	67	03.0		
			2300										
			~~2313~~	2308									
			2312										
			2316					✓ 42	11.8	66	57.2		
			2318										
			2325										
			2134										
			2347										
			2400										
08			0020										
			0023										
			0028				Apparent forward thruster out						
			0031										
			0036				Bow thruster back in commission —						
			0040										
			0042										
			0058										
			~~0100~~										
			0100										
			0104					✓ 42°	09.0'N	67°	02.0'W		
			0115										
			0116										
			0130										
			0196										

Loran "C" Nav.

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS: Comments
							36,072.7	49,031.5	all O.K.
							36,068.0	49034.6	
							36,062.0	49,037.7	OK
							36,056.6	49,040.1	O.K.
							36,039.8	49,046.8	OK
							36,024.0	49,054.1	ok.
STA # 46							36,023.0	49,056.0	ok ON STA #46
							36023.1	49056.1	o.k. in water #46
110 fath							36022.3	49056.1	← ON Bottom
							36,021.7	49,056.1	coming up - reading completed
							36,020.0	49056.2	SECURE + UNDERWAY to 47
							36,023.9	49,056.9	OK
							36,040.8	49,056.0	OK
							36,060.1	49,056.1	OK
							36,085.3	49,056.3	on station # 47
STA # 47							36,084.3	49,056.3	meter in water # 47
							36,084.5	49,056.2	meter [redacted] #47 pulled up - lost power on winch
								NO	reading taken [redacted]
45 fath							36,081.3	49,056.6	meter on deck + secured.
— gravity reading will be taken									
							36,079.9	49,056.7	meter in water #47
							36,079.1	49,056.7	meter on bottom #47
							36,076.3	49,057.1	problem trying to get the meter settled
							~~36,075.8~~	~~49,057.2~~	~~reading obtained #47~~
							36,075.8	49,057.2	meter pulled + put back down on bottom
							36,075.0	49,057.2	reading obtained #47
							36,073.9	49,057.7	meter on deck + secured
									underway to sta. #48
							36,079.3	49,057.9	POSITION OK
							36,100.8	49,057.6	POSITION OK

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION										
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
08	08	72	0215	EDT									
08			0224										
			0227										
			0230										
			0231				✓✓	42°	06.4'N	67°	09.0'W		
			0238										
			0239										
			0300										
			0315										
			0330										
			0333										
			0340										
			0349										
			0348				✓✓	42°	04.0'N	67°	15.0'W		
			0350										
			0351										
			0400										
			0415										
			0430										
			0439										
			0442										
			0449				✓✓	42°	01.2'	67°	21.2'		
			0455										
			0458										
			0507										
			0515										
			0530										
			0542										
			0543										

Form "C" Nav

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS Comments
							36,135.5	49,056.4	POSITION OK
							36,146.2	49,056.2	on sta. #48
							36,146.4	49,056.2	meter in water #48
						STA # 48 →	36,145.8	49,056.4 ✱	meter on bottom #48
							36,145.5	99,056.3	reading obtained #48
						32 fath	36,149.5	99,056.7	meter on deck & secured underway to STA #99
							36,160.3	99,057.4	POSITION OK
							36,187.4	49,057.4	POSITION OK
							36,205.4	49,056.2	POSITION OK
						STA # 49	36,206.5	49,056.1	on station #49
							36,209.5	99,056.2	meter in water #99
						26 fath	36,209.2	99,056.1 ←	meter on bottom #99
							36,209.2	99,056.2	reading obtained #99
							36,208.2	99,056.2	meter on deck & secured underway to sta # 50
							36,213.9	49,056.1	Position check
							36,238.1	49,056.1	Position check
							36,264.0	49,055.7	Position check
						STA. #50	36,275.4	49,055.6	ON STA. #50
						26	36,276.1	49,055.8 ←	METER ON WAY DOWN (IN WATER)
						FATH.	36,274.9	49,055.6	METER READING #50
							36,274.3	49,055.5	METER ON WAY UP
							36,273.9	49,055.2	meter ON BOARD AND UNDERWAY
							36,291.5	49055.2	Position check
							36,301.7	49,054.4	Position check
							36,313.7	49,052.5	Position check
						STA 51	36,328.8	49,051.6	STA. #51
						20 Fath.	36,328.5	49,051.0	METER ON WAY DOWN #51

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
08	08	72	0550								
			0602				✓ ✓	42° 01.0′	67° 28.8′		
			0612								
			0630								
			0645								
			0700								
			0715								
			0730								
			0732								
			0733								
			0739								
			0746				✓ ✓	41° 56.4′	67° 32.2′		
			0754								
			0830								
			0845								
			0853								
			0856								
			0859								
			0905								
			0915								
			0930								
			0945								
			1000								
			1015								
			1030								
			1035								
			1038								
			1045								

LORAN "C"

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS COMMENTS
							36,327.7	49,050.6	HAD READING but were on
									A slope-resetting meter.
							36,336.6	49,050.2 ←	METER READING #51
							36,326.6	49,050.4	UNDERWAY TO STA #52
							36,345.8	49,050.8	Position check
							36,359.9	49,051.8	" "
							36,374.8	49,052.9	Position check
							36,384.2	49,054.5	Position check
							36,398.5	49,055.8	Position check
						STA 52	36,393.0	49,056.9	ON STA. #52
						20 FATH.	36,393.0	49,056.0	METER IN WATER #52
							36,392.5	49,055.8	ON BOTTOM BUT TILTED, BEING
									RESET.
							36,392.2	49,055.4 ←	METER READING #52
							36,391.8	49,055.1	meter out move to next sta.
							36438.6	49055.4	position check
							36452.4	49055.6	" "
						4	36456.0	49055.4	ON Bottom #53
							36455.2	49,055.1	Problems w/ reading
							36454.8	49055.2	slip-ring connection?
									STA #53 Aborted
							36458.2	49055.9	position check
							36462.1	49,056.3	" "
							36471.2	49,057.7	" "
							36483.5	49,059.3	" "
							36497.8	49,059.1	" "
							36498.3	49059.9	" " Air gun on
							36499.1	49060.2	Sonobuoy #6 ready, Tape #3 on.
							36499.3	49060.6	" #6 deployed
							36498.6	49061.2	

CAPTAIN ESTIMATES BUOY MOTION (CURRENTS) TO NE ~1 knot

SHIP HEADING: SOUTH

GMT EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
08	08	72	1100										
			1115										
			1130										
			1145										
			1200										
			1215										
			1222										
			1228										
			1245										
			1250				✓	41°	48.0'	67°	37.5'		
			1300										
			1315										
			1330										
			1345										
			1400										
			1408										
			1415										
			1431										
			1445										
			1500										
			1517										
			1540										
			1600										
			1618										
			1638										
			1650										
			1715										
			1745										

LORAN "C"

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS: COMMENTS
							36 497.2	49062.5	Position Check
							36497.7	49063.1	Position check
							36499.5	49063.7	" "
							36499.8	49063.7	" "
							36,499.6	49,062.9	POSITION OK
							36 496.0	49 063.2	Sonabuoy # tuned
							36494.3	49064.4	on course to S-7 run 3 knots
							36 493.3	49065.2	S-7 overboard
							36 491.0	49067.7	Position check
							36 491.0	49068.1	Sonabuoy # aborted (bad anchor)
							36 490.4	49069.9	Head for Sta 54
							36 493.2	49069.3	Position check
							36 495.5	49067.9	Position check OK
							36 499.7	49065.7	Position check
							36 504.6	49063.8	Position check
							36 506.7	49062.8	Course change to Sta 53
							36,503.3	49,062.0	Position Check
							36, 490.7	49, 060.0	Position Check
							36, 479.5	49, 058.2	Position Check
							36, 467.9	49, 056.5	Position Check
							36, 457.6	49, 055.9	Position Check
							36, 450.4	49, 055.7	Position Check
							36 448.9	49 056.8	Position check
							36,447.6	49,056.5	Position check
							36, 446.5	49,056.6	Position Check
							36,443.7	49,056.2	GRAVITY METER STILL
									INOPERATIVE - SINCE
									APPROX. 12:50 HOVE TO
							36 442.1	49,055.9	Gravity still out - HOLDING.
							36 438.9	49,054.8	Gravity out - STILL HOLDING

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION							
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
08	08	72	1800										
			1802										
			1819										
			1822										
			1826										
			1830				✓	✓	41° 54.4′	67° 37.3′			
			1845										
			1849										
			~~1900~~										
			1900										
			1915										
			1924										
			1934										
			1945										
			1953										
			1955										
			1956				✓	✓	41° 51.2′	67° 44.2′			
			1958										
			2002										
			2015										
			2035										
			2052										
			2053										
			2056				✓	✓	41 49.2	67 50.0			
			2059										
			2107										
			2145										
			2203										
			2211										

LORAN "C"

OPS 12 KHz	OPS 3.5 KHz	OPS CSP	OPS MAG	OPS GRAV.	OPS SONO.	OPS STA.	X	Y	COMMENTS AND OBSERVATIONS
							36,437.4	49,054.2	Gravity out- STILL HOLDING. ~~Position~~
							36,437.2	49,054.1	GETTING UNDERWAY TO
				↓			36,444.8 ↘	49,056.0 ↘	STA. #53.
							~~36,445.0~~	~~49,055.0~~	ON STA. #53
							36,445.0	49,056.0	METER IN WATER #53
							36,445.1	49,055.7 ←	ON BOTTOM #53
							36,445.2	49,055.5	READING OBTAINED #53
							36,444.8	49,055.7	POSITION CHECK
							36,444.5	49,055.5	METER UP, HEADING FOR
							~~36,450.6~~	~~49,055.2~~ ↘	STA. ~~#54~~
							36,450.6	49,055.2	POSITION CHECK
							36,471.9	49,055.1	POSITION CHECK
							36,485.8	49,055.5	slow for Trawlers
							36,487.0	49,055.6	POSITION CHECK
							36,510.7	49,056.3	POSITION CHECK
							36,521.2	49056.4	ON STA #54 6.3mi from #53
				↓			36,521.6	49056.0	in water
							36521.7	49056.2 ←	ON Bottom #54
							36521.2	49055.9	coming up
							36521.2	49055.8	secure & UNDERWAY to #55
							36534.2	49054.8	Position check
							36561.0	49,054.4	" "
							36,580.0	49,055.3	on sta. # 55 4.7 NAUT. MI. from #54
				↓			36,579.7	49,055.4	in water #55
							36,579.3	49,055.2 ←	ON Bottom
							36,578.2	49,055.1	coming up
							~~36645.2~~	~~49055.3~~	SECURE & UNDERWAY to STA #56
							36645.2	49,055.3	position ck. +10msec X
							36663.8	49055.7	" " +10msec X
									Bridge position ON STA. 56 36633.8

(19 fath.)

18 fath.

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION							
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
			2212										
			2212				✓ ✓	41°	46.3'	67	55.5		
			2215										
			2217										
			2230										
			2300										
			2312										
			2314										
			2315										
			2316				✓ ✓	41	43.8	68	01.4		
			2321										
			2329										
09	08	72	0001										
			0013										
			0023										
			0024										
			0026										
			0029		T, I T								
			+ I T										
			0045										
			0049				✓ ✓	41°	41'.3	68°	07.7		
			0100										
			0115										
			0131										
			0145										
			0200										
			0230										
			0245										
			0259										

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	↓	COMMENTS AND OBSERVATIONS: Comments
							36639.7	49056.1	in water Loran ok 4.9 N.M. from 55
21 fath.							36639.4	49056.1 ←	ON Bottom [redacted] Loran ok #56
				↓			36639.2	49056.1	coming up. " "
							36638.2	49056.1	SECURE & UNDERway to 57
							36648.3	49056.6	position ck. ok
							36689.5	49055.6	" " "
							36702.4	49055.9	ON sta #57 5.2 N.M. from #56
							36703.3	49056.0	in water
							36703.4	49056.0	ON Bottom #57
				↓			36703.2	49056.1 ←	coming up to reset meter
							36701.8	49056.3	coming up.
							36702.0	49056.5	SECURE & UNDERway to #58
							36,743.8	49,057.7	POSITION
							36,760.6	49,056.0	Position Check
22 F							36,763.9	49,055.9	On Station #58
STA #58							36,764.0	49,055.9	In Water
							36,763.6	49,056.2	On Bottom
							36,763.5	49,056.3	[redacted]
							TILT ↑	↑	TILT
							36,764.0	49,057.0 ←	Reading
							36,764.2	49,057.0	Comming ~~UP~~ on deck & secured
							36,764.9	49,057.5	
							36,763.6	49,054.4	Position Check
							36,764.8	49,050.5	Position Check
							36,784.9	49,050.5	Position Check
							36,812.8	49,050.5	Position Check
							36,848.0	49,047.9	
							↓		MISSED READING
							36,844.5	49,052.6	POSITION OK

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
09	08	72	0312								
			0317								
			0318								
			0321								
			0324				✓	✓ 41°37.7'N	68°15.8W		
			0329								
			0330								
			0345								
			0408								
			0430								
			0437								
			0440								
			0445								
			0454								
			0501				✓	✓ 41°33.8'	68°19.6'		
			0509								
			~~0515~~								
			0516								
			0530								
			0545								
			0600								
			0609								
			0614					~~41°~~	~~68°~~		
			0617				✓	✓ 41°30.2'	68°23.7'		
			0625								
			0630								
			0645								
			0700								
			0711								

OPS (12 KHz, 3.5 KHz, CSP, MAG, GRAV., SONO., STA.)	X	Y	COMMENTS AND OBSERVATIONS Comments
	36,853.3	49,056.2	on station # 59
STA # 59	36,853.6	49,056.3	meter in water #59
14 fath	36,853.9	49,056.4	meter on bottom #59
	36,853.9	49,056.4 ←	~~[illegible]~~ meter on bottom for second time
	36,854.0	49,056.6	reading obtained #59
	36,854.1	49,056.3	meter on deck & secured
	36,881.6	49,057.8	underway to sta # 60
	36,908.9	49059.8	" " " "
	36,911.3	49,060.1	POSITION CHECK
	36,919.1	49,061.1	POSITION CHECK
STA. #60	36,911.1	49,061.2	ON STATION #60
~~20~~	36,901.8	49,061.5	ON STATION #60
20 FATH.	36,912.6	49,061.9	HAD READING AND LOST IT
			METER BEING RESET.
	36,914.9	49,062.0	TILTED - RESETTING AGAIN
	36,914.9	49,061.8 ←	METER READING
	36,916.2	49,062.1	POSITION check - ALSO METER
			OUT OF WATER.
	36,922.6	49,061.9	UNDERWAY TO #61
	36,939.9	49,062.2	POSITION check
	36,956.3	49,063.0	POSITION check
	36,969.0	49,065.2	POSITION check
23 FATH.	36,969.6	49,066.2	ON STA. #61
	36, ~~[illegible]~~ 965.1	49,066.0 ←	METER READING #61
	36, ~~[illegible]~~ 965.0	49,066.1	METER ON WAY UP #61
	36,960.2	49,066.2	UNDERWAY TO #62
	36,963.4	49,066.9	POSITION check
	36,985.3	49,069.1	POSITION check
	37,008.8	49,071.2	POSITION check
44 FATH.	37,024.0	49,071.5 ←	ON STA. #62
STA. #62			

~~[illegible]~~

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION									
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
09	08	72	0719	EDT			✓	✓ 41°	27.1'	68°	28.3'		
			0725										
			0740										
			0805										
			0842										
			0847										
			0853				✓	✓ 41°	24.3'	68°	33.4'		
			0859										
			0859										
			0909										
			0930										
			0941										
			1000										
			1018										
			1034										
			1040										
			1042										
			1043										
			1054				✓	✓ 41°	20.3'	68	37.4		
			1059										
			1104										
			1115										
			1130										
			1145										
			1200										
			1218										
			1230										
			1230										
			1245										

LORAN "C"

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	x	y	COMMENTS AND OBSERVATIONS: COMMENTS
							37,023.9	49,071.1	METER READING #62 - METER ON
									WAY UP.
							37,023.4	49,070.9	ON WAY TO #63 (STATION)
							37,037.0	49,072.6	POSITION check S-1 (-30 msec) -10 msec ON
							37,070.3	49,079.2	" " Loran 'C' ok
							37,082.8 ?	49075.9	IN water S-1 signal out
							37,082.2	99,075.5	position ck Loran "C" ok.
				✓			37081.0	49,075.3 ✓	" " " " "
46 fath.							37,079.7	49079.5	reading #63 4.9 mi from 62
							37,080.0	49,074.4	coming up #63
							37,078.8	49,073.5	secure & UNDERway to #64
							37,099.0	49,075.4	Position check Loran ok.
							37108.5	49,075.1	" " " "
							37,125.5	49,075.1	" " " "
							37,134.3	49,080.0	" " " "
							37,142.7	49,085.0	" " " "
							37,144.1	49,085.9	ON STA #64
							37,144.0	49,085.6	IN water
				✓			37,143.6	49,085.6	ON Bottom #64
43 fath.							37,141.7	49,085.0 ✓	RESET METER 5.2 mi from #63
							37,141.6	49,084.9	coming up
							37,141.3	49,084.9	SECURE + ONDERway to 65
							37,144.7	49,086.6	position check Loran ok
							37157.2	49092.3	" " " "
							37173.6	49096.8	" " " "
							37182.1	49094.6	" " " "
							37,200.3	49,084.3	" " " "
							37,204.8	49,089.6	~~ON STA #65~~ POSITION
44 fath							37,209.8	49,089.6	~~ON STA #65~~ POSITION
STA #65							37,209.1	99,089.7	POSITION

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
09	08	72	1250	EDT							
			1302								
			1307				✓✓	41°17.3'N	68°43.2'W		
			1311								
			1319								
			1330								
			1346								
			1400								
			1416								
			1430								
			1445								
			1449								
			1510								
			1519				✓✓	41°13.0'N	68°47.4'W		
			1519								
			1519								
			1530								
			1545								
			1600								
			1615								
			1630								
			1631								
			1643								
			1645				✓✓	41° 08. 9'	68° 51. 7'		
			1646								
			1653								

slipping on gravity winch removed to be examined - possible fault contact in slip housing

{SLIP RING REPAIRED BY F. JENNINGS}

Loran "C" Nav

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Y	COMMENTS AND OBSERVATIONS (Comments)
STA #65	37,211.6	49,090.1	on sta # 65
	37,207.8	99,089.1 ←	meter on bottom #65
44 fath	37,206.5	99,088.8	reading obtained #65
	37,205.8	49,089.0	meter on deck + secured #65
			underway to sta #66
	37,211.2	49,088.9	POSITION
	37,228.6	49,088.0	POSITION OK
	37,248.0	49,090.6	Position Check
	37,263.3	49,100.1	POSITION OK,
	37,266.9	49,103.9	POSITION
	37,271.7	99,102.3	on sta # 66
STA #66	37,271.2	99,102.0	meter in water #66
49 fath	37,271.1	99,102.6 ←	position check - pulling meter - problem with control box - meter may have hung up on bottom during take up.
	37,271.0	49,102.6	reading obtained #66
	37,271.1	49,102.7	meter on deck & secured #66
			underway to sta #67
	37,274.5	49,104.2	position check
	37,285.7	49,107.8	POSITION CHECK
	37,307.1	49,113.3	Position check
	37,321.7	49,118.6	Position check
STA. #67	37,333.0	49,115.8	ON STA. #67
(46 FATH.)	37,332.4	49,115.9	METER IN WATER #67
	37,332.8	49,116.3 ←	Position check
	37,332.4	49,116.4	METER READING #67
	37,332.5	49,116.4	CONFIRMED READING AND METER COMING UP.
	37,333.0	49,116.5	METER ON BOARD ~~AND UNDERWAY TO #68.~~

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION									
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES		LONGITUDE ± DEGREES	LONGITUDE MINUTES		TYPE	QUAL.
09	08	72	1656												
			1715												
			1731												
			1745												
			1750				✓	✓	41°	05.2′	68°	56.6′			
			1757												
			~~1758~~												
			1809												
			1830												
			1845												
			1900												
			1911												
			1913												
			1930				✓	✓	41°	01.0′	69°	01.3′			
			1933												
			1945												
			1952												
			2002												
			2015												
			2025												
			~~2047~~												
			2047												
			2103					✓	40°	57.6	68°	57.0			
			2115												
			2130												
			2148												
			2200												

LORAN "C"

OPS 12 KHz	OPS 3.5 KHz	OPS CSP	OPS MAG	OPS GRAV.	OPS SONO.	OPS STA.	X	Y	COMMENTS AND OBSERVATIONS COMMENTS
							37,333.6	49,116.8	UNDERWAY TO STA. #68
							37,364.1	49,123.9	POSITION check
						STA. #68	37386.7	49129.4	" "
					✓		37394.1	49129.6	IN water #68
						(47 FATH.)	37394.7	49129.8	reading
							37394.9	49129.8	coming up
							37,393.8	49,129.3	UNDERWAY TO #69
							37,414.1	49,136.2	POSITION check
							37,433.0	49,141.9	POSITION check
							37,450.3	49,146.4	POSITION check
						(43 FATH.)	37,461.3	49,145.6	ON STAT. #69
						37,461.5 49,150	37,461.9	49,145.4	METER IN WATER #69
							37,461.3	49,144.5	POSITION check
							37,460.0	49,144.2	METER OUT of water #69
									HOLDING STATION WHILE ENGINES
									ARE BEING WORKED ON.
							37,457.4	49,143.1	POSITION check
							37454.8	49,144.1	UNDERWAY - COURSE 145°T
							37,454.0	49,145.7	Position check ◎
							37,454.0	49,147.6	Position check ◎
							37457.1	49,151.8	Aquatronics sonobuoy - ch. 10 #8 Being readied
									captain maneuvering
							37459.4	49164.1	position ch.
							37456.4	49167.2	Sonobuoy #8 overboard
							37454.6	49168.4	OK.
							37454.7	49170.7	Upper red light in
							37454.5	49173.5	OK.
							37455.1	49175.4	OK

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
09	08	72	2215										
09	08	72	2230										
			2235										
			2245										
			2300										
			2315										
			2330										
			2345										
09	08	72	2400										
10	08	72	0015										
			0027										
			0045										
			0100										
			0115										
			0130										
			0145										
			0158										
			0215										
			0230										
			0245										
☆			0255				✓	40°	59.6′	69°	01.8′		
			0313										
			0330										
			0336										
			0402					41°	01.8′	68°	59.0′		
			~~0418~~										
			0418										
			0430										
			0445										
			0500					41°	05.8′	68°	54.4′		

Stadium #9

OPS 12 KHz ~~7.5 KHz~~ Unisoon	CSP	MAG	GRAV.	SONO.	STA.	Loran "C" COMMENTS AND OBSERVATIONS X	Y	Comments
				✓		37,455.8	49,178.2	OK
				✓		37454.5	49181.2	OK
						37456.0	49182.0	ok. sono #8 off - holding position
						37456.4	49183.5	captain reports course 170°T &
						37454.4	49185.9	sono buoy #8 drifting ≈ North.
						37453.4	49187.2	position check, ship holding position
						37454.6	49188.6	" " " " "
						37455.2	49190.4	" " " " "
						37455.9	49189.6	Position check
						37453.8	49185.5	Position check
						37454.0	49182.9	Sono #9 deployed 2 knt current w/ship to N
						37454.7	49179.2	Position check
						37455.5	49176.0	Position check
						37457.0	49173.4	Position check
						37458.1	49171.3	Position check
						37459.6	49169.4	~~Sono 9 off~~ Position check
						37462.3	49167.9	Sono 9 off
						37465.5	49166.5	Position check
						37470.8	49164.6	Position check
						37473.3	49161.0	Position check
						37470.4	49157.5	Mag on LINE 1
						37466.7	49154.7	CSP initiated
						37464.6	49153.8	Position check LINE 1
								change speed
						37,438.9	49,147.3	POSITION check line 1
								STOP TAPE #3
								START TAPE #4
						37,408.2	49,140.2	POSITION check line 1
						37,392.5	49,135.3	" " " "
						37,377.4	49,129.5	" " " "

GMT EDT				TIME ZONE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
10	08	72	0515	EDT							
			0530								
			0545								
			0600					41° 10.9′	68° 50.0′		
			0615								
			0630								
			0645								
			0700					41° 16.0′	68° 45.7′		
			0715								
			0730								
			0745								
			0800								
			0815					C 41° 21.4′	C 68° 41.0′		
			0830								
			0845								
			0900					41° 26.1′	68° 34.9′		
			0915								
			0930								
			0945								
			1000					41 30.5	68 29.6		
			1015								
			1030								
			1045								
			1100					41 36.0	68 24.6		
			1103								
			1115								
			1130								
			1147								
			1200					41°41.5′N	68°17.0′W		
			1215								

LORAN "C"

OPS: 12 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS: COMMENTS
						37,361.4	49,124.2	Position check line I
						37,344.9	49,118.4	"
						37,324.8	49,113.5	"
						37,307.4	49,108.8	"
						37,289.2	49,103.8	"
						37,270.4	49,099.1	"
						37,252.4	49,094.4	"
						37,235.5	49,091.2	"
						37,218.0	49,087.9	"
						37,200.4	49,085.0	"
						37,181.3	49,081.5	"
						37162.5	49078.5	"
						37,146.1	49,075.5	Upper red lite on
						37,118.2	49,072.9	OK
						37,097.5	49,069.9	"
						37,077.8	49,067.5	OK
						37057.8	49065.1	ok.
						37038.9	49063.6	ok
	✓	✓				37020.2	49062.8	position check ok.
						37009.3	49060.4	" " "
						36989.2	49057.5	" " "
						36967.5	49055.2	" " "
						36947.8	49053.3	" " "
						36926.6	49051.5	" " 10:58 Tape off
						36920.6	49051.0	maggie off to shorten cable 11:00 Tape 5 ON
						36903.1	49050.2	11:08 maggie back on
						36880.3	49049.3	OK
						36855.1	49047.8	ok.
						36,836.0	49,046.8	OK
						36,813.4	49,045.4	OK

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
10	08	72	1225	EDT				41°43.7'N	68°14.4'W		
			1228	EDT							
			1245								
			1300					41°45.6'N	68°16.8'W		
			1315								
			1330								
			1345								
			1400					41°49.0'N	68°22.3'W		
			1415								
			1430								
			1445								
			1506					41 52.4	68 28.0W		
			1515								
			1530								
			1545								
			1553								
			1559								
			1600					41°55.8°	68°35.0'		
			1615								
			1630								
			1645								
			1653					NO SIGNAL			
			1655					SIGNAL ON			
			1700								
			1715								
			1717								
			1740								
			1742								
			1747								
			1750								

LORAN "C" NAVIGATION

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
									COMMENTS
							36,800.0	49,054.8	start course change 120° T
steady on							36,798.7	99,049.3	C/C END LINE 1 - START LINE 2
							36,796.0	49,041.2	POSITION OK
							36,802.9	99,038.5	POSITION OK
							36,807.3	99,035.8	POSITION OK
							36,813.0	49,033.2	POSITION OK
							36,817.8	99,030.4	POSITION OK
							36,822.0	49,027.9	POSITION OK
							36,825.6	49,025.7	POSITION OK
							36 832.3	49 023.0	"
							36 838.2	49 020.8	"
							36 844.7	49 018.0	" "
							36,847.3	49 016.7	Position Check
							36,851.1	49,014.6	POSITION OK
							36,856.4	49,012.5	Position check
							36,058.6	49,011.5	Trouble w/ mag. Paper.
							36,859.2	49,011.5	Paper was caught - O.K. now.
							36,860.5	49,010.1	Position check
							36,864.3	49,009.4	Position check
							36,866.0	49,007.7	" "
							36,869.9	49,006.4	" "
							36,872.8	49,005.1	Position check
							36,874.5	49,004.1	" "
							END TAPE #5		
							START TAPE #6		
							36,876.7	49,002.1	POSITION CHECK
							36876.2	49001.9	

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION						
								LATITUDE		LONGITUDE			
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	± DEGREES	± MINUTES	± DEGREES	± MINUTES	TYPE	QUAL.
10	08	72	1802					~~42~~	~~08.4~~				
			1800					42	02.6	68	42.5		
			1817										
			1830										
			1845										
			18[illegible]										
			1900					42	05.8	68	47.7		
			[illegible]										
			1936										
			1930					42	07.8	68	50.0		
			2000										
			2030					42	09.3	68	44.6		
			2100					42	10.7	68	42.0		
			2130					42	11.9	68	~~38.0~~ 37.0		
			2200					42	13.1	68	37.5		
			2230										
			2253										
			2307					42	13.0	68	34.0		
			2315										
			~~[illegible]~~										
			2325										
			0033					42°	08.2'	68°	36.6'		
			0100					42°	06.3'	68°	38.7'		
			0135										
			0138										
			0130					42°	01.8'	68°	41.0'		
			0200					41°	58.7'	68°	42.2'		
			0230					41°	55.3'	68°	43.1'		
			0300					41°	~~49~~ 9'	68°	47.3'		

54.9

LORAN "C" NAVIGATION

OPS

12 KHz | 3.5 KHz | CSP | GRAV. | SONO. | STA.

COMMENTS AND OBSERVATIONS

x	y	COMMENTS
36,876.5	49,001.4	POSITION CHECK
		[illegible]
[illegible]	[illegible]	[illegible] NOTED - BLX
36,879.0	49,000.3	~~Pos. CHECK~~
[illegible]	[illegible]	
[illegible]	[illegible]	
~~36[illegible]~~	—	BRIDGE FIX
[illegible]	—	
[illegible]		[illegible] 067
36867	—	Bridge Fix
		"
~~36762.4~~		"
36762.4		"
36738.9		
		Pull gear to begin gravity
36,730.7		END line 3
36731.0	48999.9	ON gravity sta ATTEMPT [redacted] - in water
		currents too great for meter
		resume CSP.
36732.1	49,000.0	streaming CSP + Maggie gear
Fix From Bridge		Loran A
Fix From Bridge		" "
~~[illegible] Tape # 6~~		End Tape #6
Begin Tape #7		
Fix From Bridge		Loran A
"	"	" Current change
"	"	" "Questionable"
One of the Loran Lines May have been off		
Error in Cut from bridge		

will use Bridge / erroneous reading from Nantucket
fixes based on Loran "A" / flare stn - in vicinity of base line extension

SITE 1 SURVEY

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
11	08	72	0337										
			0400					41	49.5	68	51.2		
			0418										
			0430										
			0500					41	43.1	68	53.2		
			0530										
			0546										
			0550										
			0600					41°	42.0'	68°	57.8'		
			0606										
End			0609										
[illegible]			0619		LINE 51-1								
			0627										
			0630										
			0633										
			0647										
			0700					41°	40.0'	69°	00.0'	From Bridge	
			0~~705~~					41°	40.3'	69°	09.9'	L C	
			~~0710~~										
			~~0715~~										
			0712										
			0715										
			0720										
			~~0725~~	0723				41	38.8	69	02.0		
			0726										
			0730										
			0735					41	38.4	69	01.5		
			0739										
			0745										

Site 1 Survey

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS — COMMENTS
							37098.3	49069.0	
							37,029.6	49,008.3	POSITION CHECK
							37,048.1	49,009.7	POSITION CHECK
							37062.7	49010.7	" "
							37,094.0	49,012.7	" "
							37136.4	49011.7	" " +10 msec S-1
							37,127.7	49,0112	" "
									UNIBOOM BEING PREPARED to go
									INTO WATER.
							37,131.1	49,011.1	POSITION Check
									Uniboom in
							37,147.1	49,011.2	UNIBOOM ON
							37,135.6	49,011.6	ON COURSE LINE S1-1 ✓
							37,142.2	49,011.7	MAGNETOMETER TURNED-off
							37,144.1	49,011.7	Fishing boat dead ahead
							37,148.0	49,011.6	MAG BACK ON
							37,158.6	49,011.7	POSITION Check
							37,168.1	49,011.7	POSITION check
							37,177.1	49,011.7	POSITION Check
							37,179.3	49,011.8	" "
							37,182.7	49,011.7	" "
							37,185.8	49,011.8 ?	Beginning Turn to 140° T S1-1' ✓
							37,188.5	49,012.8	POSITION check
							37,189.6	49,012.2	POSITION check
							37,189.6	49,013.1	C/C to 050 S1-2 ✓
							[illegible]	[illegible]	S/ on course 050
							37,184.4	49,013.1	

Stc 1 Survey

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
11	08	72	0800										
			0815										
			0820										
			0830										
			0845										
			0900										
			0909					41	42.0	68	54.9		
			0913										
			0915										
			0924					41°	41.0'	68	54.1		
			0928										
			0945										
			1006										
			1015										
			1030										
			1048					41	37.4	68	59.2		
			1100										
			1103					41	36.4	68	59.4		
			1115										
			1130										
			1145										
			1159					41°39.2'N		68°55.2'W			
			1215					41°38.7'N		68°54.5'W			
			1230										
			1305										
			1315										
			1330										
			1340										
			1343										
			~~1400~~ 1345										

Site 1 Survey

OPS 12 KHz	3.5 KHz	CSP	MAG	~~GRAV.~~	SONO.	STA.	COMMENTS AND OBSERVATIONS X	Y	COMMENTS
✓	✓	✓	✓				37,184.8	49,012.8	
							37,175.5	49,012.6	
							37,164.1	49,012.6	Adjust S1 (x) 10 msec
✓	✓	✓					37,156.6	49,012.6	
							37,145.3	49,012.8	
✓	✓	✓					37,133.2	49,012.7	
							37,125.7	49,012.6	c/c to 143°T begin ~~S1-3~~ ✓
							37,124.5	49,013.1	S/on 143 S1-2'
							37,124.6	49,013.5	
							37,125.8	49,014.9	c/c 234 T begin ~~B~~ S1-~~4~~3 S1-3
							37,127.2	49,014.8	S/o
							37,132.3	49,014.8	S1 loss of signal
							37,160.1	49,014.7	10 min jump all ok.
							37160.1	49,014.7	" "
✓	✓	✓					37169.9	49014.8	" "
							37193.8	49015.2	c/c to 145°T S1-3'
							37194.6	49016.3	
							37194.8	49016.8	c/c to 054°T Begin S1-4
							37182.9	49016.8	
							37167.1	49016.8	
							37151.5	49017.0	144?
							37,136.7	49,016.9	c/c on S1-4 to 199°T ✓
							37,135.6	49,019.0	c/c end S1-4 start S1-5 234°T
							37,145.4	49,019.0	
							37,166.0	49,019.1	
							37,175.9	49,019.0	
							37,187.1	49,019.0	
							37,194.5	49,019.2	c/c on S1-5 ✓
							37,196.0	49,019.4	steady on course
							37,195.9	49,019.5	~~c/c 1355~~ ?

Site 1 Survey

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
11	08	72	1400								
			1415								
			1430								
			1446								
			~~1450~~								
			1450								
			1454								
			1504								
			1515								
			1532								
			~~1545~~		1547						
			1600								
			1615								
			~~1619~~		1627						
			1630								
			1645								
			1648								
			1648								
			~~1651~~								
			1651								
			1700								
			1707								
			1715								
			1718								
			~~1730~~		1729						
			1730								

SONOBUOY # 10

Site 1 Survey

C/C 1400?

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS: X	Y	comments
							37,188.4	49,021.1	Position Check
							37,173.6	49,020.9	" "
							37,158.6	49,020.8	" "
							37,141.7	49,021.3	" "
							~~37,141.3~~	~~49,019.2~~	~~" "~~
							37,135.6	49,021.1	C/C S1-7
							37,135.7	49,019.5	S/O S1-7
							37,141.3	49,019.5	Tape change to #9 Position Check
							37,146.6	49,018.7	" "
							37,155.0	49,016.3	" "
							37,163.5	49,014.9	" "
							37,172.1	49,013.4	" "
Bridge Lib.							37,181.1	49,012.2	" "
1620							37,188.5 (174)	49,011.2 (11.7)	C/C 143°T continue S1-7
1630							37,191.0 (180.8)	49,011.5 (11.2)	Position check
							37,192.2	49,014.0	" "
							37,192.3	49,014.6	40" Gun shut off
									END LINE # S1-7
									BEGINNING APPROACH FOR
							Bridge → 37182.6 @ 1650	15.2	SONO BUOY # 10
							37,182.6	49,015.1	Position check (Official word ~~From bridge of ending line S1-7~~).
							37,186.0 (196)	49,015.5	Position check
							37,185.8 (186)	49,015.3	SONO BUOY #10 ON BOARD
									120 lb. GUN IS FIRING. IT IS BEING
									USED FOR SITE #1 CROSSING.
							37,193.8 (183)	49,015.0	Position check
							37,192.0 (182)	49,015.2	" "
							37,186.4 (176.4)	49,015.2	~~SONO 8~~ Position check
							37,185.7	49,015.0	SONO BUOY #10 IN WATER

Site 1 Soundbuoy #10 and
~~START~~ Site 11

GMT DAY	GMT MO	GMT YR	GMT EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
11	08	72	1735								
			1745								
			1800								
			1815					SOUNDBUOY #10			
			1830								
			1845								
			1900								
			1918								
			1918								
			1930								
			1945								
			2000								
			2000					68° 52.8	41° 38.4		
			2018								
			2030								
			2035					41° 38.5'	68 51.7		
			2045					SOUNDBUOY #11			
			2100					68° 49.6	41° 39.4		
			2115								
			2129								
			2148					41° 41.3'	68 46.2		
			2212								
			2230								
			2245								
			~~2250~~ 2255								
			2259								
			2303					✓ 41° 38.3'	68 47.7		
			~~2304~~ 2309								
			2315								
			2331								

Multibeam

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS — COMMENTS
		✓	✓		✓		371733	49015.2	ok.
		✓	✓		✓		37170.0	49015.1	ok.
		✓	✓		✓		37, 162.8	49, 015.2	OK. ok with bridge
		✓	✓		✓		37, 156.4	49, 015.1	OK.
		✓	✓		✓		37, 150.6	49, 014.9	OK. Checks with Loran A.
		✓	✓		✓		37, 143.8	49, 014.8	OK.
		✓	✓		✓		37, 137.2	49, 014.7	OK.
		✓	✓				37, 131.2	49, 014.5	CSP off. End Sono. 10. Heading for Site #2
		✓	✓				~~37, 131.7~~ 371271	49, 014.4	S-1 10msec higher than bridge reading
		✓	✓				37, 120.8	49, 015.8	± 10 Msec S-1
		✓	✓				37, 114.8	49, 018.2	OK
		✓	✓				37115.3	49020.7	Loran "C" ok. Ship circling, prep. for sonobuoy.
							37117.5	49, 022.3	OK
							37117.5	49, 021.1	OK
		✓	✓	✓			37113.7	49020.9	Sonobuoy #11 overboard
		✓	✓	✓			37104.7	49021.0	OK
		✓	✓	✓			37092.4	49021.1	OK
							37080.9	49020.9	OK
							37069.0	49021.0	OK
							37054.6	49020.9	All gear down for (inc. SONO.) grav., CSP gear secure
							37038.8	49021.1	
							37058.5	49021.9	position check ok.
							37081.0	49022.9	" " Proceeding to gravity sta. 3 to resume grav. line
				✓			37086.1	49024.9	on sta. #70
				✓			37085.9	49024.8	in water #70
86 fath.							37085.6	49024.8	on bottom #70
							37085.3	49024.8	coming up
							37085.7	49024.8	secure & underway to #71
							37072.5	49026.2	Position check ok

DAY	MO	YR	~~GMT~~ EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
11	08	72	2345								
12	08	72	0004								
			0015								
			0018								
			0020								
			0027					✓ 41°40.3'N	68°42.6'W		
			0033								
			0038								
			0045								
			0102								
			0115								
			0140								
			0141								
			0144								
			0148								
			0151					✓ 41°42.2'N	68°36.4'W		
			0200								
			0200								
			0215								
			0230								
			0249								
			0302								
			0303								
			0308					✓ 41°43.8'N	68°29.0'W		
			0310								
			0315								
			0316								
			0330								
			0345								

LORAN "C" NAVIGATION

OPS

12 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS Comments
						37055.8	49027.2	Position check ok.
						37,032.0	49,027.6	POSITION OK
						37,030.9	49,025.7	POSITION OK
					Sta #71	37,031.3	49,025.4	on sta #71
					88 fath	37,032.1	49,025.3	meter in water #71
						Man not advised		meter on bottom #71
						37,035.5	49,025.4	reading obtained #71
						37,031.5	49,025.5	meter aboard + secured #71
								underway to sta. #72
						37,029.1	49,025.2	POSITION OK
						37,009.8	49,025.5	POSITION OK
						36,987.9	49,025.6	POSITION OK
						36,970.8	49,027.9	POSITION OK
					Sta #72	36,970.5	49,027.9	on sta #72
						36,970.8	49,028.0	meter in water #72
					94 fath	36,971.0	49,028.0	meter on bottom #72
						36,971.2	49,028.0	reading obtained #72
						36,970.5	49,027.9	meter on deck + secured #72
								underway to sta #73
						36,959.0	49,028.1	POSITION OK
						36,939.7	49,028.6	POSITION OK
						36,915.4	49,029.3	POSITION OK
					Sta #73	36,909.5	49,030.9	on sta #73
					93 fath	36,909.6	49,031.0	meter in water #73
						36,908.6	49,030.9	meter on bottom #73
						36,908.2	49,031.1	reading obtained #73
						36,907.4	49,031.1	meter on deck + secured #73
								underway to sta. #74
						36,887.1	49,031.9	POSITION OK
						36,859.4	49,032.9	" "

GMT DAY	GMT MO	GMT YR	EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
12	08	72	0400										
			0415										
			0427										
			0430										
			0437					✓	41° 46.4′		68° 18.0′		
			0446										
			0500										
			0515										
			0530										
			0545										
			0559										
			0601										
			0610					✓	41° 52.9′		68° 06.1′		
			0612										
			0618										
			0630										
			0645										
			0700										
			0715										
			0729										
			0732										
			0740					✓	41° 58.0′		67° 55.0′		
			0749										
			0835										
			0836										
			0840					✓	42 00.8		67 50.6		
			0848										
			0855										
			0931										

LORAN "C"

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Y	COMMENTS AND OBSERVATIONS — COMMENTS
	36,832.2	49,033.8	Position check
	36,805.2	49,034.8	" "
STA. 74	36,810.4	49,035.7	ON STA. # 74
(35 FATH.)	36,810.3	49,035.9	METER ON WAY DOWN #74
	36,809.0	49,036.0	METER READING #74
	36,808.7	49,036.2	UNDERWAY TO STA. # 75
	36,788.8	49,035.4	Position check
	36,760.2	49,035.2	" "
	36,728.8	49,035.0	" "
	36,700.3	49,034.7	" "
	36,676.2	49,034.7	ON STATION #75
STA. 75	36,675.9	49,034.8	METER IN WATER #75
(86 FATH.)	36,674.7	49,034.8	METER READING #75
	36,674.8	49,034.9	METER COMING UP
	36,674.7	49,035.0	UNDERWAY TO STA. #76
	36,655.6	49,034.7	Position check
	36,628.8	49,034.9	" "
	36,600.7	49,034.9	" "
	36,571.8	49,034.6	" "
STA. 76	36,553.3	49,034.7	ON STATION # 76
(93 FATH.)	36,552.1	49,034.7	METER ON WAY DOWN (IN WATER)
	36,551.5	49,034.7	METER READING #76
	36,551.0	49,034.8	UNDERWAY TO STA. # 77
STA 77	36501.4	49034.2	ON STA #77 4.1 mi. from 76
✓	36501.2	49034.2	in water.
100 Fath.	36501.0	49034.0	on Bottom #77
	36500.8	49033.9	coming up
	36499.8	49034.0	SECURE · UNDERWAY to 78
	36455.7	49034.4	Position check ok

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
12	08	72	0954								
			0955								
			0959								
			1007					✓ 42°03.3'	67°43.6'		
			1008								
			1017								
			1030								
			1045								
			1100								
			1115								
			1138								
			1142								
			1145					✓ 42°06.8'	67°31.4'		
			1151								
			1159								
			1215								
			1230								
			1245								
			1300								
			1308								
			1311								
			1315								
			1319					✓ 42°10.1'N	67°18.0'W		
			1332								
			1333								
			1345								
			1400								
			1415								
			1430								
			1445								

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	Loran "C" X	Y	COMMENTS AND OBSERVATIONS Comments
sta. 78			✓				36 430.9	49035.3	on sta #78 5.8 mi. from 77
			✓				36430.6	49035.2	in water
96 fath.							36430.0	49035.2	on Bottom #78
			✓				36429.9	49035.2	reading taken
							36429.9	49035.1	coming up
							36429.3	49,035.2	secure - underway to #79
							36,413.6	49,035.5	Position check ok (checks w/bridge)
							36380.0	49036.1	" " "
							36359.0	49036.5	" " "
							36331.5	49037.1	" " "
							36312.5	49038.4	" " "
STA 79							36312.7	49038.6	in water. 9.7 nmi. mi from #78
96 fath.							36312.3	49038.5	on Bottom #79
							36310.8	49038.5	coming up
							36310.4	49038.4	meter secure & underway to sta #80
							36,288.7	49,039.2	POSITION OK
							36,259.6	49,040.4	POSITION OK
							36,230.1	49,041.5	POSITION OK
							36,199.3	49,042.9	POSITION OK
							36,190.9	49,043.9	on sta. #80
94 fath							36,190.0	49,043.5	meter in water #80
							36,189.7	49,043.9	meter on bottom #80
							36,189.6	49,043.9	reading obtained #80
							36,188.6	49,043.5	meter on deck & secured underway to sta. # [redacted] 81
							36,173.5	49,044.2	POSITION OK
							36,149.6	49,045.9	POSITION OK
							36,123.0	49,047.1	POSITION OK
							36,095.6	49,049.2	POSITION OK
							36,084.6	49,050.7	POSITION OK

GMT				TIME ZONE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
12	08	72	1451	ED T							
			1453								
			1458								
			1505					✓ 42911.4'N	67005.3'W		
			1522								
			1523								
			1530								
			1545								
			1600								
			1615								
			1630								
			1632								
			1635								
			1644								
			1654								
			1705					✓ 42° 09.2'	66° 50.2'		
			1725								
			1745								
			1800								
			1815								
			1823								
			1828					✓ 42° 10.2'	66° 39.2'		
			1830								
			1831								
			1834								
			1840								
			1900								
			1916								
			1930								

1451
1333

Loran C Navigation

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS — Comments
							36,085.7	49,050.3	on sta #81
							36,085.6	49,050.5	meter in water #81
							36,085.2	49,050.3 ←	meter on bottom #81
100 fath							36,084.5	49,050.6	readings obtained #81
							36,082.8	49,051.1	meter aboard, resume underway to sta #82
							36,072.5	49,051.9	POSITION OK
							36,045.4	49,057.8	" "
							36,018.4	49,057.6	" "
							35,996.2	49,061.5	" "
STA. 82							35,992.1	49,063.2	ON STATION #82
(82 FATH.)							35,991.9	49,063.4	METER ON WAY DOWN (IN WATER) #82
							35,991.4	49,063.5	METER TILTED - BEING RESET
							35,989.4	49,064.0	METER TILTED AGAIN - BEING RESET
							35,988.9	49,064.5 ←	BEAM STICKING AND METER TILTED BEING RESET AGAIN.
							35,988.3	49,065.2	METER READING #82
							35980.7	49066.6	UNDERWAY to STA #83
							35949.1	49071.0	Position check ok - Checks w/bridge
							35,922.9	49,072.6	Position check
							35,898.0	49,072.5	" "
STA. 83							35,893.7	49,072.4	ON STAT. #83
600 ft.							35,893.5	49,072.4 ←	METER ON BOTTOM #83
92 fath.							35,893.5	49,072.6	METER READING #83 being Taken #83
							35,893.3	49,072.8	" " COMPLETE #83
							35,893.4	49,072.7	METER COMING UP #83
							35,893.4	49,072.9	UNDERWAY TO #84
							35,865.8	49,075.0	Position check
							35,841.2	49,077.1	" "
							35,821.5	49,080.1	" "

August 1972

EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
12	08	72	1945								
			1951								
			1954								
			1957					✓ 42° 08.9′	66 25.7		
			2001								
			2003								
			2010								
			2015								
			2021								
			2030								
			2045								
			2100								
			2115								
			2130								
			2145								
			2200								
			2230								
			2217								
			2300								
			2307								
			2308								
			2310					✓ 41 56.6	66 47.1		
			2316								
			2323								
			2345								
13	08	72	0000								
			0015								
			0040								
			0100								
			0115								

LORAN "C"

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS COMMENTS
				✓			35,802.4	49,083.3	position check
sta 84				✓			35801.5	49084.8	ON sta. #84
				✓			35802.4	49085.0	in water
92 feet.							35802.6	49084.8 ←	on Bottom #84
				✓			35802.9	49084.9	Reading taken
							35802.8	49085.1	coming up.
							35803.5	49085.2	secure & underway to #85
							35804.7	49085.0	maggie in water
				✓			35808.7	49085.1	maggie on
				✓			35822.3	49085.6	Position check ok
				✓			35850.3	49086.8	" " "
				✓			35878.7	49087.8	Position check - o.k.
				✓			35907.1	49088.6	" " "
				✓			35934.2	49089.4	" " "
				✓			35961.5	49090.0	" " "
				✓			35,988.5	49089.5	" " "
				✓			36044.4	49090.0	" " "
				✓			36060.5	49090.9	maggie in (off 2241)
							36054.0	49092.7	Position check-approach-sta 85
sta 85				✓			36051.4 ✓	49093.4	on sta 85
							36051.3	49093.4 ✓	in water
37 feet							36051.5	49093.3 ←	on bottom 85
							36051.1	49093.0	coming up.
							36051.4	49093.0	Meter secure & underway to 86
							36076.1	49093.0	maggie on
							36097.2	49092.8	Position check
							36124.5	49093.3	Position check
							36165.6	49094.0	Position check
							36195.3	49094.5	Position check
							36216.8	49096.4	Position check

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION							
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
			0130										
			0145										
			0200										
			0214										
13			0216										
			0217										
			0220				✓	41°	45.9	67°	07.8		
			0228										
			0242										
			0244										
			0302										
			0315										
			0330										
			0345										
			0400										
			0415										
			0430										
			0445										
			0500										
			0515										
			0530										
			0545										
			0601										
			0615										
			0630										
			0632										
			0700					41° 21.3'		68° 44.5'			
			0717										
			0723										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	Loran "C" X	Y	COMMENTS AND OBSERVATIONS Comments
							36,232.8	49,099.8	position check (underway towards #86)
							36,253.1	49,102.7	position check
							36,274.4	49,105.4	position check
32F							36,287.6	49,106.6	On Station 86
#86							36,287.7	49,106.5	in Water
							36,287.9	49,106.4	on Bottom
							36,287.3	49,106.2	Reading
							36,286.9	49,106.5	Comming Up a
							36,292.6	49,107.3	Magnetic in Water
							36,294.3	49,107.4	Secure and Underway to 87
							36,319.8	49,109.8	position check (underway towards #87)
							36,340.4	49,111.7	Position Check
							36,367.4	49,114.1	Position check
							36,381.4	49,116.4	Position check
		✓					[illegible]	49,117.0	[illegible]
		✓					[illegible]	49,121.1	[illegible]
	✓						[illegible]	49,122.2	[illegible]
		✓					[illegible]	49,123.6	[illegible]
		✓					[illegible]	49,124.6	[illegible]
		✓					36,542.2	49,125.4	" "
		✓					[illegible]	49,126.7	" "
							36,598.1	49,127.9	" "
							36,626.5	49,128.9	" "
							36,653.1	49,131.7	" "
							36,681.6	49,134.7	" "
									NO SIGNAL ON SLAVE 1
							READING From Bridge		ON LORAN "A"
							SPEED REDUCED BUT NOT ENOUGH TO EFFECT MAGGY, but		
							MAGGY BEING Brought IN.		
									Bridge slowing down to aid IN Bringing in maggy.

GMT DAY	GMT MO	GMT YR	GMT EDT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
13	08	72	0726	LORAN "C" "SLAVE 1 STILL OUT. BRIDGE USING LORAN "C" SLAVE 2									
			~~0732~~	PLUS 1 LORAN "A" LINE. THIS IS HOW VALUE AT									
				RIGHT WAS OBTAINED.									
								✓ 41°	18.7'	67°	47.9'		
			0732										
			0736										
			~~0739~~										
			0739										
			0744										
			0753										
			~~0815~~	0800									
			0815		298	est.							
			0830										
			0842										
			0845					41	21.5	67	57.6		
			0900					41	22.3	67	58.8		
			0915										
			~~0930~~	930				41°	23.8'	68°	12.3'		
			0937										
			1003										
			1015										
			1031				Bridge Fix ✓	41	26.0	68	06.5		
			1032					41	~~54.2~~ 25.2	68	07.4		
			1036										
			1042						~~34.2~~				
			1057					~~41~~	~~2~~				
			1106				Bridge Fix ✓	41	26.3	68	09.0		
			1115						~~0~~		~~6.8~~		
			1130				Bridge Fix	41	27.0	68	13.8		
			1145										

OPS 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	X	Y	COMMENTS AND OBSERVATIONS
						STA. 87	36,782.0	~~49,1~~ 49,143.0	ON STA. # 87
						22 FATH.	~~4~~ 7'		~~METER ON BOTTOM~~
									METER ON BOTTOM #87
									METER READING AND METER
									COMING IN. #87.
									UNDERWAY TO #88
			✓						Maggie back on
			✓						S-1 out
			✓					49134.1	S-1 out
			✓					49129.3	S-1 out
								49125.3	course CHANGE
									Bridge fix
									" "
							Jupiter W	49116.3	Cape Race Loran C station out -shut down for repairs-
							16195.0	49113.1	Bridge fix (Jupiter from Bridge)
							16196.0	49110.1	" "
							16201.4?	49099.2	maggie down Jupiter +20 reads 16221.4
				✓			~~1620~~ 16201.4	49097.3	S-1(W) Probably +20 (Reads 16221.4)
				✓			16220.9 (direct reading)	49099.3	in water #88 (W.+20)
				✓			16221.1 (direct reading)	49099.3 ←	ON Bottom #88 (W.+20)
				✓			16221.1 "	49099.1	coming up "
							16221.0 "	49099.0	Secure + UNDERway to #89 (W +20)
			✓				16222.1 "	49096.2	maggie ON
			✓				~~16224.6~~ "	~~49090.8~~	
			✓				16224.6 "	49090.8	Position check (W+ +20)
							16226.8	49085.3	" (W+ +20) ship slowed
			✓				16228.6	81.6	" " " "

~~GMT~~ EDT				TIME ZONE	SHIPS		NAVIGATION						
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	± LATITUDE DEGREES	± LATITUDE MINUTES	± LONGITUDE DEGREES	± LONGITUDE MINUTES	TYPE	QUAL.
13	08	72	1238										
			1245										
			1300										
			1316										
			1317										
			1330										
			1400										
	*		1419		1416	*							
			1422										
			1426										
			1427										
			1431										
			1434										
	*		1916				*	41°	33.7	68°	42.7		
			1946										
			1500										
			1511				✓	41°	31.3 (3 1 . 3) N	68°	40.0	Bridge	from A fix
			1513										
			1516										
			1519										
			1528										
			1529										
	*		1541										
			1542										
			1604				✓	41°	28.3'	68°	37.0'		
			1607				From Bridge	41	28.0'	68	36.8'		
			1608										
			1611										

Loran "C" Nav.

OPS (12 KHz, 3.5 KHz, CSP, MAG, GRAV., SONO., STA.)	Jupiter, Florida W Lubiana	Nantucket	COMMENTS AND OBSERVATIONS
	16,237.9?	49,065.4	
	16,239.0?	49,062.6	No Newfoundland
	16,240.7?	49,058.2	" "
	16,242.7?	49,047.2	
			slow for ~~#~~ traffic
	16,244.9?	49,051.2	
	16,257.6?	49,043.9	
83F	16,259.8	49,039.6	On Station 89
	16,259.2	49,039.7	on Water
#89	16,259.4	49,039.7	On Bottom
	16,260.3	49,039.7	Reading
			~~Commencing up~~
	16,259.3	49,039.7	Position
	16,257.6?	49,039.6	Commencing Up
	From	Bridge	Loran A-(C) Fix
	16,259.2	49,041.9	Secure + Underway
	— — —	— — — —	to Station # 90
	16,257.2?	49,046.0	Position Check
bad reading	16,275.9?	49,048.3	on sta # 90
14 fath	16,256.5?	49,048.4	meter in water #90
	16,257.6?	49,048.4	meter on bottom #90
	16,256.8?	49,048.4	reading obtained #90
	16,256.9	49,048.3	meter on deck + secure & #90
			underway to sta. #91
	16,263.7?	49,055.2	ALL LIGHTS OUT ~~Standby~~
	16,263.9?	49,055.6	LIGHT ON SLAVE 1 AGAIN.
STA. 91	16,261.9?	49,059.1	ON STA. 91 METER IN WATER
52 FATH.	16,262.2?	49,059.3	METER ON BOTTOM. #91
	16,262.5?	49,059.3	METER READING #91
	16,261.8?	49,059.4	METER ON WAY UP #91

NOTE

GMT DAY	MO	YR	EDT TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
13	08	72	1617										
			1705										
			1729										
			1745										
			1753				✓	41° 18.5		68° 44.9'			
			1759										
			1802										
			1810										
			1830										
			1837										
			1838										
			1841				Bridge ✓	41° 20.0'		68° 46.8'			
			1843										
			1852										
			1926										
			1927										
			1931				Bridge ✓	41° 21.2'		68° 49.1'			
			1933										
			1939										
			1956										
			2010										
			2012										
			2015				our Loran "C" ✓	41° 22.7'		68° 51.1'			
			2017										
			2024										
			2046										
			2054										
			2056										
			2059				✓	41 24.4		68 53.0			
			2103										

see following page on Cape Rare TD cross check with Bridge Loran "A"

LORAN "C"

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	JUPITER W #	NANTUCKET Y #	COMMENTS AND OBSERVATIONS
	16,262.2	49,059.4	UNDERWAY TO STA. # 92
	16,269.9 ?	49,070.4	POSITION check ?
	16,270.8?	49,074.8	POSITION check ? +50? - W
	~~16,279.5~~	49071.1	" " " "
49 fath	16279.2 ?	49081.3?	on sta. # 92 " "
	16, 278.1?	49,081.3?	METER ~~READING #92~~ ON BOTTOM
	16,278.5?	49,081.4 !	METER READING #92
	16,278.1?	49,081.6?	UNDERWAY TO STA. #93
	16,279.8?	49,076.7	POSITION check
STA. 93	16,280.4?	49,074.8	ON STATION # 93
58 FATH.	16,280.2?	49,074.8	METER IN WATER # 93
	16,280.4?	49,074.9	METER ON BOTTOM # 93
	16,281.4?	49,074.9	METER READING # 93
	16,280.4 ?	49,075.1	UNDERWAY TO # 94
STA # 94	16,283.0?	49,068.0	ON STA. # 94
67 Fath.	16,282.9?	49,067.9	METER IN WATER # 94
	16,282.2 ?	49,068.3	METER ON BOTTOM #94
	16,282.8?	49,068.2	METER READING #94
	16,283.0?	49,068.4	UNDERWAY TO #95
	37221.2 X	49063.9 Y	Cape Race slave acquired.
✓	37225.8	49060.2	ON sta. #95
Sta #95	37225.3	49060.3	in water
68 fath	37225.2	49060.2 ←	ON Bottom #95
	37225.0	49060.2	coming up.
	37225.1	49060.3	secure & underway to #96
	37228.1	49056.1	Position check
	37229.5	49053.6	ON sta #96 2.2 mi from 95
	37229.8	49053.5	in water
80 fath.	37230.0	49053.4 ←	ON Bottom #96
	37229.5	49053.5	coming up

NOTE

~~GMT~~ EDT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
13	08	72	2110								
			2130								
			2139								
			2140								
			2143					✓ 41° 25.6'	68° 54.6'		
			2148								
			2156								
			2212								
			2222								
			2224								
			2227					✓ 41° 26.9'	68° 56.3'		
			2230								
			2237								
			2255								
			2307					✓ 41° 28.2'	68° 58.4'		
			2314								
			2322								
			2340								
			2344								
			2347								
			2348					✓ 41° 29.6'N	69° 00.5'W		
			2356								
			0015								
			0020								
			0024								
			0028					✓ 41° 30.9'N	68° 02.0'W		
			0036								
			0037								

All Loran "C" Race Point TD's most likely 10 usec's

Too low - cross checked position plots with bridge

Loran "A" above mention verified (Chart time 0080)

Cape Race slave reads 3 usec high on lab receiver compared to bridge

46. 030.6 238.6 291.2 84 6/504 #2

OPS 12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.	X	Y	COMMENTS AND OBSERVATIONS — Comments
	37229.5	49053.5	UNDERway to #97
	37241.1 +10	49047.8	Position check [redacted] s' +10 msec
✓	37241.2 +10	49047.7	ON sta #97 1.7 mi from 96
	37241.0 +10	49047.6	in water #97
80 fath.	37241.1 +10	49047.6 ←	ON bottom #97 s' +10 msec
	37240.4 +10	49047.4	coming up.
	37239.7 +10	49047.2	secure + UNDERway to #98
	37232.6 ok	49044.2	Position check ok. { Choices S-1 : Right on - no signal lt. on +10 msec - no signal / Koff. +10 ON
✓	37233.4 ok	49041.7	ON sta 98 1.8 mi from 97
	37233.2 ok	49041.4	in water
75 fath.	37232.2 ok	49041.5 ←	ON bottom #98
	37231.4 ok	49041.2	coming up
	37230.8 ok	49041.3	Secure & underway to #99
	37237.0 ok	49036.1	Position check
84 fath.	37239.2	49036.0 ←	ON sta 99 - IN water 1.8 mi from 98
	37238.0	49035.8	coming up
	37237.3	49035.5	Secure & UNDERway to #100
	37243.1	49031.1	ON sta #100
* to #100 80 feet	37,242.9	49,031.0	meter in water #100
	37,242.5	49,030.8 ←	meter on bottom #100
	37,242.1	49,030.7	reading obtained #100
	37,239.9	49,030.7	meter on deck & secured #100 underway to sta #101
Trouble with Cayce Race alone. Pierson will not hold signal.	37,296.5	49,026.1	POSITION [redacted] question Cayce Race
	37,248.1	49,025.7	on sta #101 79 fath
	37,248.6	49,025.7 ←	meter in water #101
	37,255.8	49,025.6	reading obtained - Cayce Race off
	37,254.3	49,025.5	meter aboard & secured underway to sta #102

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GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
14	08	72	0059	EDT							
			0103								
			0106								
			0108	EDT				✓ 41°32.5'N	69°04.0'W		
			0118	EDT							
			0119								
			0137								
			0145								
			0148								
			0151								
			0156					✓ 41°33.8'N	69°06.0'W		
			0207								
			0207								
			0226								
			0227								
			0229								
			0234								
			0235					✓ 41°35.0'N	69°07.8'W		
			0242								
			0242								
			0301				Bridge Reading	✓ 41°36.0	69°09.2'		
			0307								
			0309								
			0319								
			0320					41°36.0'N	69°09.4'W		
			0328	approaching Nantucket							
			0328	baseline extension							
				TD may be in error							
				will use bridge Loran "A"							
				fixes							

metrowire slipped off sheave

Loran "C" Navigation

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO	STA.	X	Y	COMMENTS AND OBSERVATIONS
							37,248.3	49,020.7	on sta # 102
							37,247.3	49,020.6	meter in water #102
							37,247.1	49,020.6	← meter on bottom #102
							37,247.0	49,020.6	reading obtained #102
							37,246.0	49,020.7	meter on deck + secured #102
									underway to sta #103
							37,248.6	49,017.6	POSITION OK
							37,246.0	49,016.7	on sta # 103
STA 103							37,254.9	49,016.8	meter in water #103
90 fath							37,255.4	49,016.7	← meter on bottom #103
							37,254.1	49,016.7	reading obtained #103
							37,252.9	49,016.7	out of water + secure
									Underway + sta. 104
							37,257.1	49,013.3	POSITION
							37,256.8	49,013.5	on sta. # 104
sta 104							37,256.8	49,013.3	meter in water #104
							37,257.2	49,013.2	← meter on bottom #104
94 fath							37,257.0	49,013.3	reading obtained #104
							37,256.9	49,013.2	meter on deck + secured
									underway to sta. # 105
							37,262.0	49,011.0	POSITION
							37,261.2	49,009.9	on sta. # 105
							37,261.7	49,009.9	meter in water #105
							37,262.5	49,010.1	← meter on bottom #105
92 fath							37,261.9	49,010.9	reading obtained #105
							37,261.9	49,010.1	meter on deck + secured #105
									underway to stn II 106

GMT				TIME ZONE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	±	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
14	08	72	0352								
			0402								
			0403								
			0408					✓ 41° 37.7′	69° 11.0′		
			0410								
			0418								
			0952								
			0454					✓ 41° 38.8′	69 13.2′		
			0459								
			0501								
			0511								
			0531								
			0546					✓ 41° 36.8	69° 16.3′		
			0547					SLAVE 1 NOW OUT, [redacted] DUE TO			
			0550					DAYLIGHT HOURS.			
			0553								
			0605								

LORAN "C"

OPS (12 KHz / 3.5 KHz / CSP / MAG / GRAV. / SONO. / STA.)	X	Y	COMMENTS AND OBSERVATIONS — COMMENTS
	37,265.4	49,008.0 ?	Position check
STA. #106	37,264.7	49,007.4 ?	ON STA. #106
(94 Fath.)	37,265.2	49,007.3 ?	METER IN WATER #106
	37,264.4	49,007.6 ? ←	METER ON BOTTOM #106
	37,264.6	49,007.5 ?	METER READING #106
	37,263.8	49,007.7 ?	~~UNDERWAY~~ TO METER
			SECURE AND UNDERWAY to #107
STA. #107	37,269.7	49,004.0 ?	ON STA. #107
(102 Fath.)	37,270.1	49,004.2 ?	METER IN WATER #107
	37,270.3	49,004.1 ? ←	METER ON BOTTOM #107
	37,270.7	49,004.3 ?	READING BEING TAKEN
	37,271.0	49,004.5 ?	UNDERWAY TO STA. #108
	37,299.3	49,004.2 ?	Position check
STA. #108	37,309.9	49,003.2 ?	ON STA. #108
(90 Fath.)	37,310.5	49,003.2 ?	METER IN WATER #108
	37,311.0	49,003.3 ? ←	METER ON BOTTOM #108
	~~37,322.6~~		METER READING #108
			UNDERWAY TO #109 = HOME