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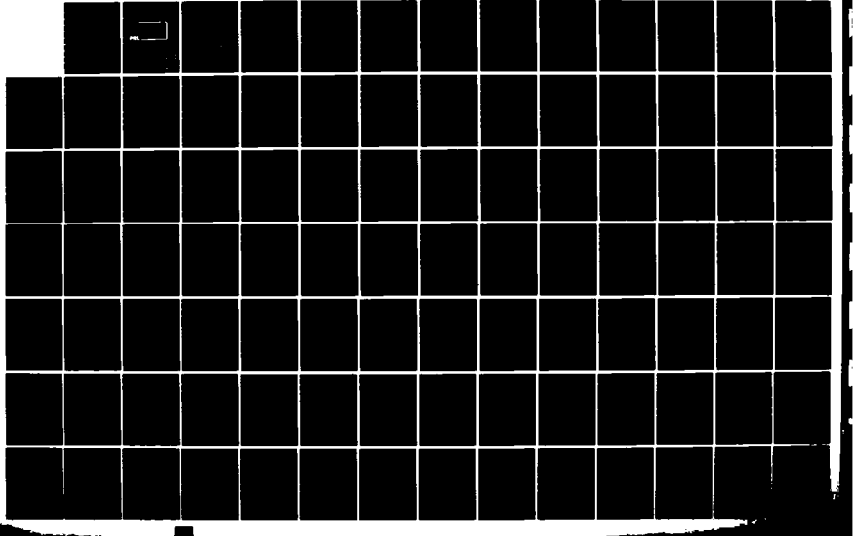

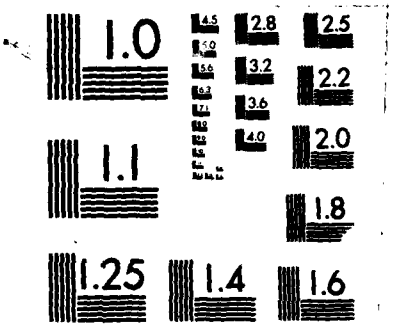

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Long Term Statistical Measurements of Environmental Acoustics Parameters in the Arctic

AEAS Report No. 2 - Low Frequency Transmission Loss Measurements in the Central Arctic Ocean

B. M. Buck

PRL

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POLAR RESEARCH LABORATORY, INCORPORATED
6309 Carpinteria Avenue, Carpinteria, CA 93013

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This work was sponsored by:

ASW Environmental Acoustics Support Office
NORDA, under contract N00014-84-C-0394 with
Office of Naval Research, Arctic Sciences

PRL TR 55
15 January 1985

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: PRL TR-55	2. GOVT ACCESSION NO.: AD-A156 576
	3. RECIPIENT'S CATALOG NUMBER:
4. TITLE (and Subtitle): Long Term Statistical Measurements of Environmental Acoustics Parameters in the Arctic AEAS Report No. 2 - Low Frequency Transmission Loss Measurements in the Central Arctic Ocean	5. TYPE OF REPORT & PERIOD COVERED: Technical Report
	6. PERFORMING ORG. REPORT NUMBER:
7. AUTHOR(s): B. M. Buck	8. CONTRACT OR GRANT NUMBER(s): N00014-84-C-0394
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Polar Research Laboratory, Inc. 6309 Carpinteria Avenue Carpinteria, CA 93013	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS:
11. CONTROLLING OFFICE NAME AND ADDRESS: SCIENTIFIC OFFICER Prog. Mgr. Arctic Sciences (Code 425AR)	12. REPORT DATE: 15 January 1985 13. NUMBER OF PAGES: 100
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): ASW Environmental Acoustics Support Office NORDA NSTL Station, MS 39529	15. SECURITY CLASS. (of this report): UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE:

16. DISTRIBUTION STATEMENT (of this Report)

Approved for Public Release; Distribution Unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

Approved for Public Release; Distribution Unlimited

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Central Arctic Ocean
transmission loss
low frequency
underwater acoustics
shots
deep water
hydrophone

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This is one of a series of technical reports on arctic environmental acoustics data collected between 1970 and the present by Polar Research Laboratory, Inc. for various navy agencies. Propagation loss data were taken using manned ice camps and aircraft and ambient noise levels were measured using arctic data buoys that operated through the NIMBUS 6 and NOAA series satellites. The present report of the series (AEAS

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Report No. 2) addresses propagation loss in deep water (i.e., over 1000 m) of the Central Arctic Ocean at low frequencies (10 - 500 Hz). The data were taken primarily from underwater shots, although some CW data are included, at source depths between 18.3 m and 243.8 m. Receiving hydrophones were at depths between 9 and 91 m. Other data in the tabulations include for the source: station name, type, depth below sea level and below the ice, nominal TNT yield, measured yield, latitude and longitude, water depth, and source energy at the analysis frequencies. For the receiver: station name, hydrophone depth below sea level and below the ice, latitude and longitude, water depth, and received signal energy at the analysis frequencies. For the path: range, bottomside ice roughness, % of path less than 1000 m deep, % of path over an abyssal plain, mean path depth, and minimum depth in the path. These data are contained in the appendices, with each appendix corresponding to a different source depth.

Keywords:

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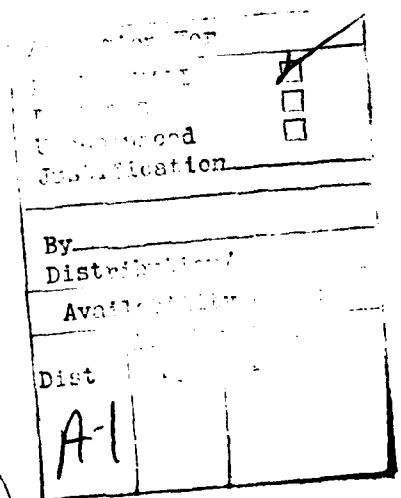

ARCTIC Environmental Acoustics
Data report No. 2

General Background

This is intended as one of a series of "Data Reports" on Arctic environmental acoustics drawn from a base collected by Polar Research Laboratory, Inc. over the years 1970 to the present under contracts with the Office of Naval Research (Undersea, Acoustics, Sensor Technology and Arctic Branches), the Arctic Submarine Laboratory NOSC and the Naval Electronics Systems Command, Code 612. Sponsorship of this analysis and reporting effort is from the ASW Environmental Acoustics Support office of the Naval Oceanographic Research and Development Activity through contract N00014-84-C-0394 with the Office of Naval Research, Arctic Branch. The data, to be presented in several volumns and distributed as completed, will cover propagation loss measurements primarily from underwater shots but also including some CW experiments from manned ice camps, and ambient noise measurements made from Arctic data buoys using the NIMBUS 6 and NOAA series satellites. The data are to be presented in a form of "first-level" statistical analysis. That is, in its primary form suitable for distribution to those interested in Arctic acoustics, in much the same way oceanographic data is distributed after a typical cruise. It is intended that higher level analyses can be made from these reports and other available data by those wishing to do so. Some of the data have already received such treatment and were reported in various journals and technical reports (see, for example, references 1 through 7).

Data Collection Instrumentation

For the collection of both propagation loss and ambient noise data, single omni hydrophones at various depths under the ice were used. These units were acceleration-cancelling phones mounted from cable

suspensiions designed to minimize "flutter" and "bounce" self-noise. In some cases these suspensions were link chain to a 11 kg (25 pound) weight, and others used a Kevlar "hair faired" electromechanical cable, also to a 11 kg weight. All phones were made neutrally buoyant and decoupled from the suspension to further decrease flutter effects. They were covered with "hairs" of polypropalene to minimize flow-generated noise and to attain neutral buoyancy. All were calibrated at either TRANSDEC/NOSC, Underwater Sound Reference Detachment/ONR, or at PRL using secondary standards from the former labs. Considerable pains were taken in the field to assure that the systems were not contaminated from nearby ice camps or icebreakers. This was accomplished by operating from small, remote, "quieted" ice camps, where all equipment was designed to be battery-operated. The data buoys, of course, were completely uncontaminated by the presence of manned activities.

Several experiments were conducted to measure the effectiveness of the hydrophone suspension system in eliminating, or at least minimizing, self noise caused by the shear current (primarily from wind-driven ice movement). One technique used for this was reported in reference 8. It was concluded from these experiments that the measurements at 10 Hz and above were affected very little by self noise. However, measurements below 10 Hz were affected somewhat, and therefore should be viewed with caution. An analysis is underway at this time to determine the degree of this contamination below 10 Hz. This is being done by performing statistical correlations between measured ice speed (the prime producer of shear current, especially in the Central Arctic) of the self-navigating ambient noise data buoys and 3.2 and 5 Hz noise level measurements, and between the latter and tabulated seismic activity in the Arctic area. Various experiments have indicated the possibility that seismic activity leaking into the Arctic Basin via T-phase can affect the noise spectrum below 10 Hz.

Explosives used in the propagation work at short ranges were: standard Signal, Underwater Sound (SUS) 0.8 kg (1.8 pound) charges Mk 61 (18 and 244 meters - 60 and 800 feet); Mk 82 (18 and 91 meters - 60 and 300

feet); and specially modified Mk 61s for detonation at 61 m (200 ft), 122 m (400 ft) and 183 m (600 ft) - dropped through ice holes at manned ice camps and from low-flying aircraft into open leads. For the longer ranges, these charges were augmented with block charges of TNT, where the SUS were used to detonate the larger charges. Ranges were measured by various means of navigation including fixes from Transit satellite receptions and bubble sextant sun lines from the ice and Omega receivers aboard the aircraft. In many cases the bubble pulse interval of the explosive was monitored using low-sensitivity phones in the vicinity of the charges, in order to determine effective TNT yield for source energy calculations. However, in other cases this was not feasible.

The ambient noise data buoys were first employed in the Beaufort Sea in the spring of 1975 and used the NIMBUS 6 satellite, with its Random Access Measurement System (RAMS) for navigation and retrieving noise level, atmospheric pressure and air temperature data. The data handling limitations of that satellite system constrained the measurements to four 1/3rd octave bands (3.2, 10, 32 and 1000 Hz for some buoys and 10, 32, 100 and 1000 Hz for others). The levels at those frequencies were sampled at each of the eight, 3-hourly synoptic weather times (0000, 0300, 0600....Z) each day. Those data buoys, called "SYNRAMS" for Synoptic RAMS, were used primarily in the western Central Arctic and are described in reference 9. When the TIROS ARGOS (NOAA series) satellite became available, the activity had shifted to the Eurasian Basin of the Central Arctic and were used there. ARGOS enabled more precise navigation (200-300 m circular probable error) and more data throughput. The SYNARGOS data buoy, described in detail in reference 10, saw its first use in 1980 and makes measurements of ambient noise level in eleven 1/3rd octave bands spaced between 5 and 1000 Hz in some cases, and 5 to 300 Hz in others. All bands are sampled at the weather synoptic times every three hours, the same as SYNRAMS buoys. Each filter output is averaged with a constant bandwidth averaging time product of 32 Hz seconds. The data are rough-processed by Service ARGOS and sent to PRL in the form of digital tape recordings every two weeks.

At PRL the hydrophone calibrations, preamp gain, bandwidth corrections and other system gains are applied to derive the spectrum levels of ambient noise at each 1/3rd octave filter center frequency.

The buoys are batteried to live for a full year, however, because of the continuous movement of the ice out of the basin and the deployment locations used, the average lifetime attained in the Eastern Central Arctic is on the order of ten months. Each buoy collects a large amount of sampled data - for example, 2,640 independent 1/3rd octave measurements each month, or about 26,400 measurements during a typical 10 month lifespan. Some of the SYNRAMS data buoys in the Beaufort Sea were active for over a year, one attaining a two year productive life. Although no array is involved, and the measurements are straightforward omni, 1/3rd octave levels, the buoys enable measurements uncontaminated by artifacts in areas and in seasons that are impractical of collection by any other means at the present time. They provide large data bases that allow true statistical portrayal of the background noise, and get around the constraints of spring-only manned ice camps in the Central Arctic. At present there are ongoing developments to extend the Arctic data buoy to study directional qualities of the noise background, signal and noise coherency, propagation loss (using an expendable projector) and the effects of hydrophone depth on both signal and noise. While they will add significantly to the knowledge of the acoustic noise background, they will not supplant or detract from the value of the 1/3rd octave omni buoys that are the subject of this series of reports.

With one exception, all of the SYNRAMS and SYNARGOS data buoys employed a hydrophone at 30.5 m (100 feet) below sea level, or about 27.4 m (90 feet) below the bottomside of the ice. One SYNARGOS buoy had phones at four depths: 9 m (30 ft), 30.5 m (100 ft), 61 m (200 ft), and 91 m (300 ft) below sea level. In the data to be presented, the various buoys are identified by their "ARGOS identification number" (I.D.).

Reporting Areas

For ambient noise the measurements will be given in separate reports by geographic areas of the Arctic and its adjacent seas. Figure 1 gives the areas for this and the future ambient noise reports. Figure 1 does not mean to imply that the data buoys evenly covered each of the areas - only that the buoys were in a specified area. These areas are: (1) the North Barents Sea; (2) the West Greenland Sea; (3) the East Central Arctic Ocean (i.e., the Eurasian Basin demarked by the Lomonosov Ridge on one side and the 1000 m curve on the other); (4) the West Central Arctic; (5) the Kara Sea; and (6) the Chukchi Sea. This preliminary area selection was somewhat, but not entirely, arbitary. For example, areas (3) and (4) are probably not statistical different, but the measurements were separated by several years and used different type buoys. Area (1) and most of (2) are shallow, and close to the ice edge, but area (2) is one of very rapid ice movement. Areas (5) and (6) are shallow and widely separated from the other areas. As "second-level" analyses are done on the presently reported data and new data sets collected, it will probably result in a different arrangement of areas. For the present, however, the areas of Figure 1 will suffice as a means of separating the data into reasonable-sized reports.

The Present Report

General

The propagation data that are the subject of this report were collected by PRL personnel over the period 1970 to the present, primarily in Areas 3 and 4 of Figure 1 (i.e., Central Arctic), but also in the deep water portion of the northernmost part of Area 2. Most of the data are from underwater shots, although some are from low frequency CW projectors installed through the ice at manned ice camps. The sections to follow explain the various entries in the data set that is contained in the appendices.

Explanation of Entries in the Appendices

Ocean Category (C-Central; F-Front)

Most of the data entries are for the Central Arctic, where the vertical temperature and salinity distribution, and thus the sound speed profile, changes little either in time or over significant horizontal distances. Exceptions to these homogeneous sound speed conditions may occur in the near surface layer due to melting/freezing processes (however, these exceptions will have minimal effect at the very low frequencies that are the subject of this report). The sound velocity profile (SVP) there is characterized by a multi-gradient structure, with a low gradient in the upper part of the Polar Water (PW) layer and a higher gradient between PW layer and the temperature maximum within the Atlantic Intermediate Water (AIW) layer. There is a low gradient from the AIW temperature maximum to the bottom. See Figure 2 for the typical SVP in that area. The data entries in this zone are marked "C" for "Central Arctic".

Some data were taken in regions of the arctic where horizontal gradients in the sound speed distribution may be significant and noticeably impact low frequency acoustic propagation, notably those taken from Ice Stations Ruby and Pearl in 1977, which were in the

vicinity of the polar front that persists along the edge of the shelf of eastern Greenland and extends north into the Greenland-Svalbard Strait. Shots whose propagation paths crossed part of such a frontal zone are marked "F." To the west of this front, the water is similiar to that of the Central Arctic. To the east, the SVP is different, as exemplified in Figure 2. The SVP in the frontal zone is a combination of the two SVP shown in Figure 2. The assumption that the SVP considered typical of the Central Arctic is indeed that, and still a matter of some speculation. Measurements made to-date are sparce, leaving many large areas uncovered. Other fronts, where horizontal gradients in the sound speed distrubution are significant, exist in the Marginal Ice Zones of the arctic and, at least, during the summer and fall along the marginal seas. The existance of other polar fronts similiar to that in the Greenland-Svalbard Strait (e.g., between other islands such as Svalbard and Franz Joseph Land) that may extend significant distances into the Central Arctic are unmeasured and unknown at this time.

Date/year

Self-explanatory.

Source Station Name

Figure 3 is a chart of the Arctic Ocean showing the approximate locations of the various ice stations used as either or both shot-deployment or signal receiving stations. It can be used, along with the entries of this column, to locate the general site of the transmission loss (TL) measurements. For more accurate location, see the columns labeled "Source latitude" and "Source longitude."

Source type

Shots of various size have been used to gather the data. These include the Mk 61 SUS (60 or 800 feet nominal detonation depth, and 1.8 lbs TNT loading), the Mk 82 SUS (60 or 300 feet detonation depth and 1.8 lbs TNT), special SUS made from Mk 61s, where the detonation depths were 60 feet and 200, 400, or 600 feet. All of the above were

also used to detonate 55 lb block charges (some designated as "Mk 14s") for some of the measurements, especially those at long range.

Source TNT yield (nominal/measured) (lbs of TNT)

"Nominal" in this case is the TNT loading weight. "Measured" indicates that the bubble pulse frequency was measured at the deployment site. The detonation depth was assumed to be the desiign depth for the SUS used for detonation. Then, the Weston equation:

$$F = (d + 33)^{5/6} / kW^{1/3}$$

was used to calculate "measured" yield. This value, when available, was used in the source energy calculations (see column "Signal in 1 Hz band").

Source depth (feet)

The designed detonation depth of the SUS used for the initiation of the detonation relative to sea level and the bottom side of the ice above. It is to be noted that shots originating from Ice Island T-3 were deployed under sea ice ("Colby Bay") adjacent to the ice island. T-3 at that time was 100 feet thick and composed of glacial ice. The adjacent sea ice was about 12 feet thick. Unfortunately, the exact orientation of the ice island relative to the propagation paths to floe stations ARLIS 5 and 6 is unknown, but the island is believed to have been in the path. Therefore, some of the rays in the narrow vertical arcs important to long-range propagation would have struck the edge of the island, and others would have impinged on the bottom of the four by seven nautical mile ice island. Therefore, the presence of the island could have affected the T-3 data. In the appendices, the shot depths are listed for the depth below the sea ice, not the ice island ice, since this is strictly true.

Source latitude (degrees)

This is in degrees and decimal degrees - not minutes. North latitude is assumed for all entries.

Source longitude (degrees)

This is in degrees and decimal degrees - not minutes.

Water depth at source (meters)

Water depths were taken from reference 11.

Receiver station name

See Figure 3 for approximate locations of the receiving sites.

Receiver depth (feet)

The depth of the receiving hydrophone below sea level and below the bottom of the ice above. PRL deep-water measurements have been confined to the following depths below sea level: 30, 100, 200 and 300 feet. However, a small amount of CW data taken by others at deeper depths have been included.

Rcvr latitude (degrees)

This is in degrees and decimal degrees - not minutes.

Rcvr longitude (degrees)

This is in degrees and decimal degrees - not minutes.

Water depth at receiver (meters)

Water depths were taken from reference 11.

Range (n.mi.)

Selp-explanatory

Roughness (sigma ice bottom) (meters)

This column depicts the current best-estimate of the bottomside ice roughness in the transmission path. The only large-area data extant on this parameter are shown in Figure 4. Part of this figure was from data derived by LeSchack (reference 12) using upward-fathometer paper traces provided by the Arctic Submarine Laboratory (ASL) for three submarine

cruises in the early 60s. One of these cruises was in the summer and the others in winter ice. LeSchack found from the track crossing areas that there was no significant seasonal difference, summer to winter. Also, he found the roughness to be the same for the two winter-ice cruises. During SUBICEX 1-77, FLYINGFISH covered a section of the Eurasian Basin in and north of the Greenland-Svalbard Strait, steaming over 2000 n.mi. to criss-cross the area, using a digital recording system developed by PRL and operated by ASL. T. Lwellen of that lab computer-reduced the recordings in one kilometer segments along the track for mean ice depth, RMS ice roughness, standard deviation ice roughness, max keel and other statistical parameters in the segments. Later these data were contoured for the area (reference 13). The results of reference 12 and 13 are given in Figure 4 where a melding of the two is shown with dashed lines. Limited though it is, Figure 4 is the best information now available on synoptic bottomside ice roughness in the Arctic Ocean. Determinations of its accuracy and year-to-year stationarity must await further collection and analysis of submarine up-fathometer data.

% of path with depth less than 1000 m

Most of the data of this report is for "deep" arctic water. That is, in most cases the water depth in the path is 1000 m or greater. However, for some shots there were parts of the path that were less than 1000 m. This column indicates the percentage of the path where this is true. Bathymetry data for this were taken from reference 11.

% of path over abyssal plane

The percentage of the propagation path that is over a flat bottom. This is only a rough approximation taken from reference 11.

Mean path depth (meters)

Self-explanatory.

Minimum path depth (meters)

The minimum water depth anywhere along the propagation path, including that under the source and the receiver.

Received signal frequency (Hz)

This is the center of the analysis band for shots (1/3rd octave analysis band used) and CW (various analysis bands used, but all one Hz or less wide).

Signal in 1 Hz band (dB re 1 erg/cm squared per Hz for shots, dB re 1 uPa squared per Hz for CW)

Shot energy was analyzed in most cases by using analog 1/3rd octave filtering, squaring, integrating and dividing by the acoustic impedance. However, in some cases the signal was digitized and similiarly analyzed on a one-Hz basis, averaging the neighbor filters.

Signal is average of --- shots

In some cases several shots of the same yield and depth were used in rapid succession, and all recorded at the receiving station and analyzed individually. In some of those cases only the average of the shot signals were retained. Where that was the case, the number of shots used in averaging is given in this column. In most cases, however, the record for each shot signal has been retained, and the data for those shots are given individually.

Source level (1 yard) (dBre 1 erg/cm squared per Hz for shots and 1 uPa squared per Hz for CW)

In 1970 at the ARLIS 5, ARLIS 6 and Ice Island T3 camps, PRL made a major effort to measure directly the source energies of underwater explosives using CW-calibrated paths. After we compared our results with various theoretical models, we concluded that the "PI Model" of NUSC came the closest to our observed results. Therefore, we used that model to predict source energies of shots of different yield and depth.

Those values, reduced to spectrum level, are found in this column. For the CW entries, various methods of measuring source level were used. For submarine mounted HX-29s we used SCARF calibrations and measurements made at close range at the ice stations and monitor hydrophones on the sub. For the Camp 1 and Tristan HLF-3 measurements in 1980 and 1982, we used calibrations provided by NUSC from their Lake Seneca calibrations, and on-site measurements of diaphragm displacement. Other CW projections made by PRL (e.g., using NRAP) were measured by monitoring the diaphragm displacement and also a spaced monitor hydrophone.

TL (1 yd) (dB)

The result of subtracting received signal from source energy (for shots) or source level (CW). Rounding to the nearest 0.5 dB was made. However, the average error is estimated to be more on the order of plus-or-minus 2 dB.

Appendices

The data are presented in the Appendices by source depths below sea level.

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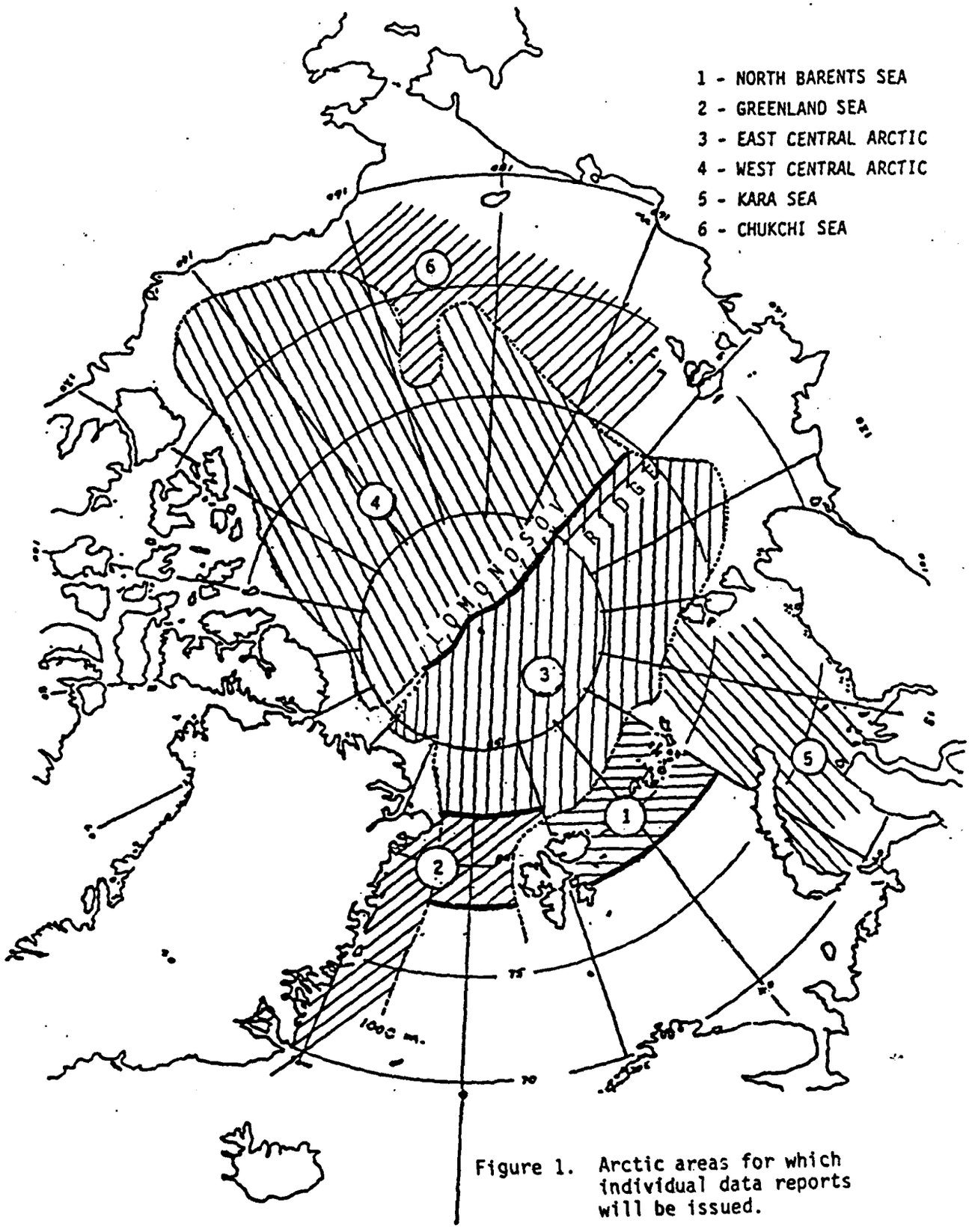
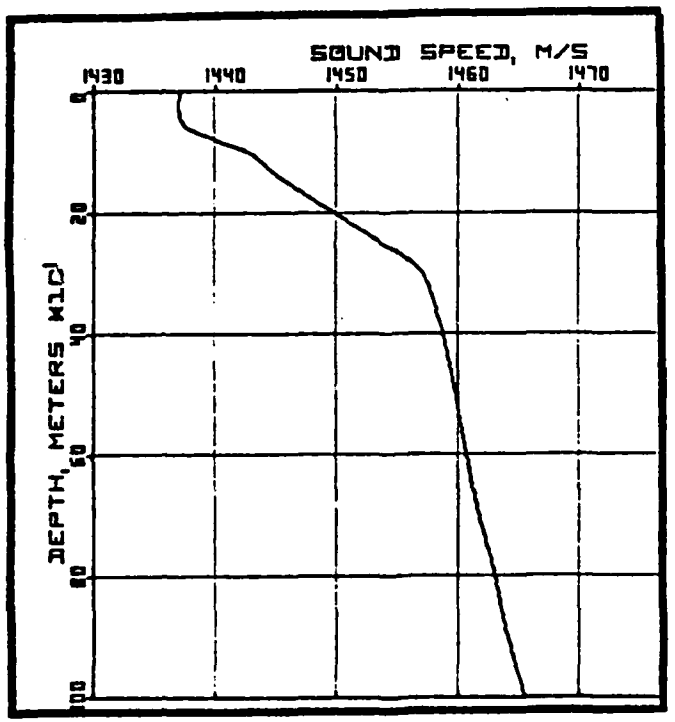
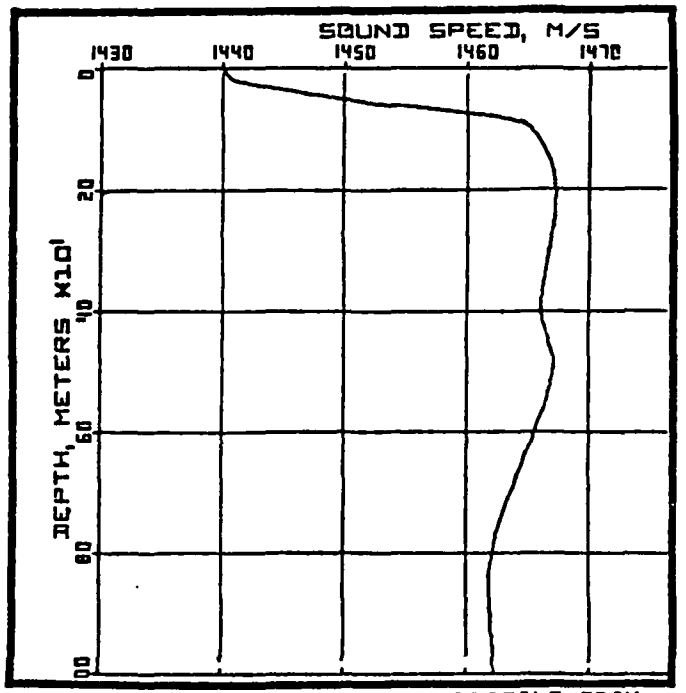


Figure 1. Arctic areas for which individual data reports will be issued.



SOUND VELOCITY PROFILE FROM
ARLIS II, WEST OF THE FRONT

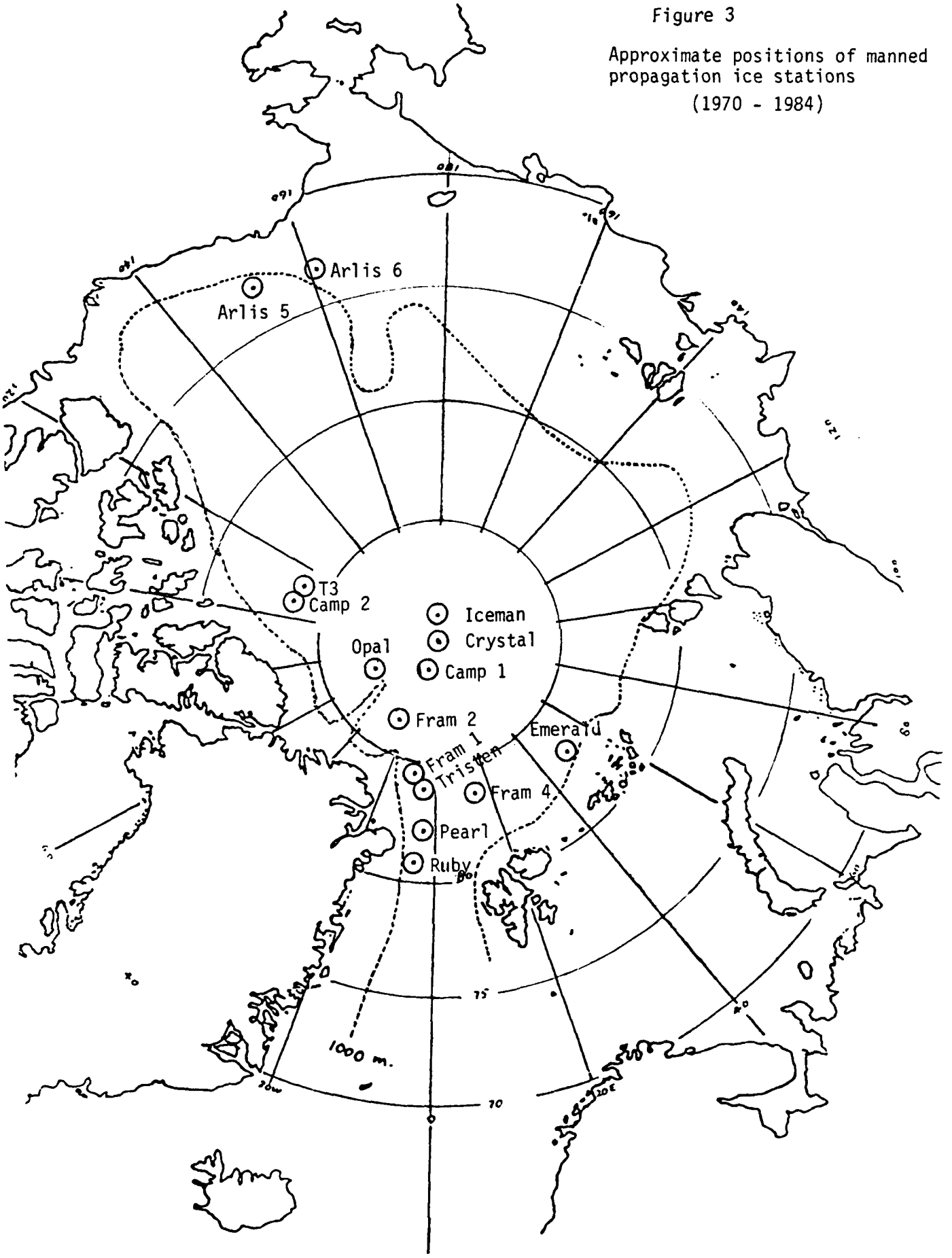


SOUND VELOCITY PROFILE FROM
USS ATKA, EAST OF THE FRONT

Figure 2. Typical SVP's to the west and east of the front in the Greenland - Svalbard Strait.

Figure 3

Approximate positions of manned propagation ice stations (1970 - 1984)



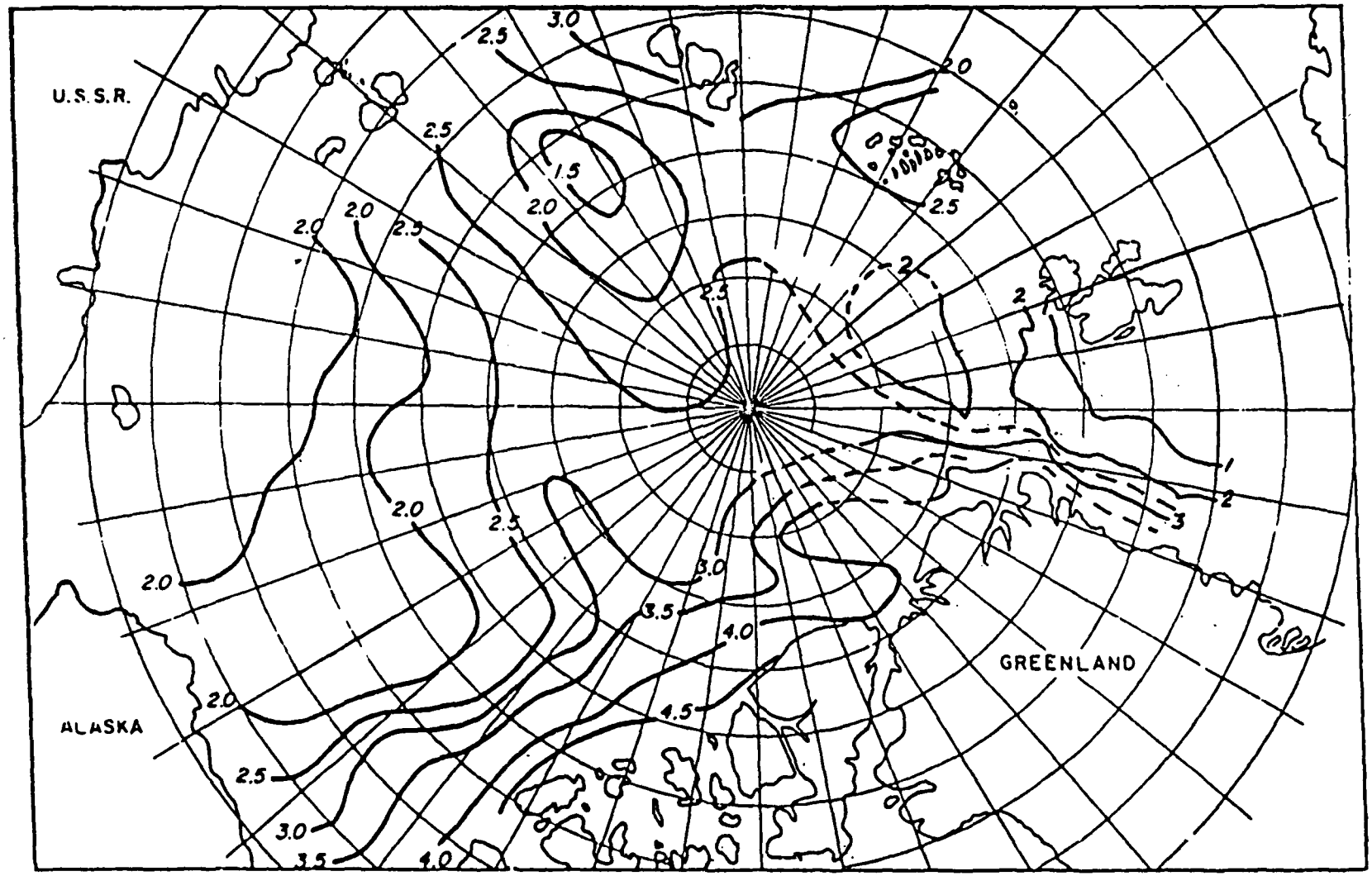


Figure 4. Best estimate of underside ice roughness in standard deviation about the mean ice depth. Contours in meters.

APPENDIX NO. 1

TL Data for Source Depth 18.3 m (60 ft) Below Sea Level

(Note: In the following tabulations, where an entry is absent, the value has not changed from the previous entry in the column.)

60'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	APR 77	A/C #23	MK 61	1.8/-	60/48	81.45	9 W	350	Pearl H3	100/88	82.18	4.7W	2400	58	2.9	10	0	3000	350	5	-44.3	1	53.7	98
																				10	-31.2	1	57.7	89
																				20	-30.1	1	53.8	84
																				50	-33.4	1	52.5	86
																				100	-49.4	1	52.6	102
																				200	-58.9	1	50.5	109.5
																				500	-68.2	1	46.8	115
									H4											5	-44.5	1	53.7	98
																				10	-32.7	1	57.7	90.5
																				20	-31.8	1	53.8	85.5
																				50	-34.4	1	52.5	87
																				100	-50.7	1	52.6	103.5
																				200	-61.5	1	50.5	112
									Ruby H6		80.78	5 W	3000	59.2	2.5	70	0	969	350	5	-43.4	1	53.7	97
																				10	-49.3	1	57.7	107
																				20	-42.1	1	53.8	96
																				50	-44.7	1	52.5	97
																				100	-59.7	1	52.6	112.5
																				200	-69.9	1	50.5	120.5
																				500	-73.5	1	46.8	120.5
			MK 61 #28						H2											5	-39.2	1	53.7	93
																				10	-43.7	1	57.7	101.5
																				20	-42.7	1	53.8	96.5
																				50	-41.3	1	52.5	94
																				100	-56.5	1	52.6	109
																				200	72.5	1	50.5	123
																				500	-75.3	1	46.8	122

1

60'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	20 APR 80	Camp 2 Helo	MK 61	1.8/-	60/50	83.72	107.47 W	2250	Opal 2	100/90	87.24	59.65 W	2800	292	3.4	0	30	2062	1350	10	-62.8	1	57.7	120.5
																				20	-59.6	1	53.8	113.5
																				50	-69.4	1	52.5	122
	26 APR 80	Camp 1				88.84	18.65 W	4150					2800	122	3	0	20	2732	1400	5	-72.8	1	53.7	126.5
																				10	-56.8	1	57.7	114.5
																				20	-49.3	1	53.8	103
																				50	-50.2	1	52.5	102.5
																				100	-74.2	1	52.6	127
			CW HLF3	-																20	61.4	1	173.6	112
																				30	65.1	6	177.1	112
																				50	74	3	182.6	108.5
																				100	61.8	3	193	131
	12 APR 70	ARLIS 6	MK 61	1.8/-	60/48	74.13	159.6 W	800	ARLIS 5 H1	200/188	73.05	152.77	3800	124	2	7	30	3407	800	10	-41.9	1	57.7	99.5
																				20	-38.9	1	53.8	92.5
																				50	-40.4	1	52.5	93
																				100	-53.1	1	52.6	105.5
									H2	100/88										10	-48.2	1	57.7	106
																				20	-44.2	1	53.8	98
																				50	-42.7	1	52.5	95
																				100	-54	1	52.6	106.5
									H3	30/18										10	-61	1	57.7	118.5
																				20	-57.5	1	53.8	111.5
																				50	-53.5	1	52.5	106
																				100	-59.5	1	52.6	112

2

60'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	14 APR 70	ARLIS 6	MK 61	1.8/-	60/48	74.13	159.6 W	800	ARLIS 5 H1	200/188	73.05	152.77 W	3800	124	2	7	30	3407	800	10	-39.7	1	57.7	97.5
																				20	-35.9	1	53.8	89.5
																				50	-39.7	1	52.5	92
																				100	-51.2	1	52.6	104
									H2	100/88										10	-44.5	1	57.7	102
																				20	-41.4	1	53.8	95
																				50	-41.3	1	52.5	94
																				100	-53.3	1	52.6	106
									H3	30/18										10	-59.5	1	57.7	117
																				20	-53.5	1	53.8	107.5
																				50	-52	1	52.5	104.5
																				100	-58.8	1	52.6	111.5
C	3 MAY 70	9.3 nmi A/C Station	MK 61	1.8/-	60/48	-	-	3500	ARLIS 5	100/188	73.4	157.3	3500	9.3	2	0	0	3500	3500					
																				20	-21	1	53.8	75
																				50	-22.3	1	52.5	75
																				100	-24.4	1	52.6	77
																				200	-27.5	1	50.5	78
		20 nmi A/C Station												20										
																				20	-26	1	53.8	80
																				50	-27.5	1	52.5	80
																				100	-26.4	1	52.6	79
																				200	-38.5	1	50.5	89

60'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	29 APR 70	ARLIS 6	MK 61	1.8/-	60/48	74.68	163.13 W	1300	ARLIS 5	200/188	73.4	156.22 W	2000	124	2	16	0	2091	600	10	-49	1	57.7	106.5
																				20	-43	1	53.8	97
																				50	-43.5	1	52.5	96
																				100	-53.4	1	52.6	106
																				200	-75	1	50.5	125.5
										100/88										10	-49	1	57.7	106.5
																				20	-46	1	53.8	100
																				50	-44	1	52.5	96.5
																				100	-56	1	52.6	108.5
																				200	-81	1	50.5	131.5
										30/18														
																				20	-60	1	53.8	114
																				50	-56	1	52.5	108.5
																				100	-62	1	52.6	114.5
																				200	-86	1	50.5	136.5

4

APPENDIX NO. 2

TL Data for Source Depth 61 m (200 ft) Below Sea Level

(Note: In the following tabulations, where an entry is absent, the value has not changed from the previous entry in the column.)

200'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	14 APR 70	ARLIS 6	MK 61 spec-ial)	1.8/1.58	200/188	74.13	159.6 W	800	ARLIS 5 H1	200/188	73.05	152.77 W	3800	124	2	7	30	3407	800	10	-31.9	2	48.6	80.5
																				20	-27.4	2	56	83.5
																				50	-33.4	2	50.5	84
																				100	-48.6	2	50	98.5
									H2	100/88										10	-39.9	2	48.6	88.5
																				20	-34.2	2	56	90
																				50	-37.7	2	50.5	88
																				100	-51.5	2	50	101.5
									H3	30/18										10	-53	2	48.6	101.5
																				20	-48.2	2	56	104
																				50	-49.7	2	50.5	100
																				100	-58	2	50	108
			MK 14 + MK 61 (spec-ial)	56.8/46.3					H1	200/188										10	-18.5	2	72.2	90.5
																				20	-15.3	2	69.5	85
																				50	-21.1	2	65	86
																				100	-34.4	2	63	97.5
																				200	-50.8	2	62.5	113.5
									F36	100/88														
																				20	-25.4	2	69.5	95
																				50	-28	2	65	93
																				100	-43.3	2	63	106.5
									H3	30/18										10	-38.9	2	72.2	111
																				20	-34.9	2	69.5	104.5
																				50	-36.8	2	65	102
																				100	-44.1	2	63	107
																				200	-49.6	2	62.5	122

1

1

200'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	9 MAY 70	T3	MK 14 MK 61 (special)	56.8 / 46.3	200 / 188	84.12	112.67 W	2000	ARLIS 6 H1	200 / 188	74.68	165.33 W	500	755	2.4	4.5	55	2632	500	10	-30.5	1	72.2	102.5
																				20	-35	1	69.5	104.5
																				50	-61	1	65	126
									ARLIS 6 H2	100 / 88										10	-36.5	1	72.2	108.5
																				20	-38.5	1	69.5	108
																				50	-65.5	1	65	130.5
C	22 APR 70	ARLIS 6	MK 14 + MK 61 (special)	56.8 / 46.3	200 / 188	74.65	164.08	1000	ARLIS 5 H1	200 / 188	73.22	156.18 W	2550	160	2	15	0	1831	600	10	-15	1	72.2	87
																				20	-12.5	1	69.5	82
																				50	-16.5	1	65	81.5
																				100	-36.5	1	63	99.5
																				200	-55	1	62.2	117
									ARLIS 5 H2	100 / 88										10	-24.5	1	72.2	96.5
																				20	26.5	1	69.5	96
																				50	-23.5	1	65	88.5
																				100	-43.5	1	63	106.5
																				200	-62	1	62.2	124
									ARLIS 5 H3	30 / 18										10	-39	1	72.2	111
																				20	-35.5	1	69.5	105
																				50	-37.5	1	65	102.5
																				100	-52.5	1	63	115.5
																				200	-76	1	62.2	138

2

200'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	9 MAY 70	T3	MK 14 MK+61 (special)	56.8/46.3	200/188	84.12	112.67 W	2000	ARLIS 5 H1	200/188	73.65	159.25 W	2000	760	2.3	3	55	2935	850	10	-32	1	72.2	104
																				20	-37	1	69.5	106.5
																				50	-60.5	1	63	123.5
									ARLIS 5 H2	100/88										10	-38.5	1	72.2	110.5
																				20	-43.5	1	69.5	113
																				50	-63.5	1	63	126.5
									ARLIS 5 H3	30/18										10	-53	1	72.2	125
																				20	-57	1	69.5	126.5
																				50	-78	1	63	141
C	28 APR 70	T3	MK 14 MK+61 (special)	56.8/46.3	200/188	84.3	112.5 W	2000	ARLIS 6 H1	200/188	74.7	163.13 W	1615	748	2.4	0	55	2831	1200	10	-32	2	72.2	104
																				20	-36.5	2	69.5	106
																				50	-61	2	65	126
									ARLIS 6 H2	100/88										10	-39	2	72.2	111
																				20	-43.5	2	69.5	113
																				50	-66.5	2	65	131.5
									ARLIS 6 H3	30/18										10	-57	1	72.2	129
																				20	-63	1	69.5	132.5
																				50	-86.5	1	65	151.5
C	25 APR 70	T3	MK 14 MK+61 (special)	56.8/46.3	200/188	84.27	112.58 W	2100	ARLIS 6 H1	200/188	74.65	162.2 W	1700	740	2.4	1	55	2798	1000	10	-27	2	72.2	99
																				20	-30	2	69.5	99.5
																				50	-54.5	2	65	119.5
									ARLIS 6 H2	100/88										10	-33	1	72.2	105
																				20	-37.5	2	69.5	107
																				50	-58.5	2	65	123.5

3

200'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	6 May 70	ARLIS 6	MK 14 MI 61 (special)	56.8/46.3	200/188	74.63	164.17 W	400	ARLIS 5 H1	200/188	73.43	156.82 W	3200	150	2	31	0	1705	400	20	-10.5	3	69.5	80
																				50	-18.5	3	65	83.5
																				100	-38.5	3	63	101.5
																				200	-63	3	62.2	125
									ARLIS 5 H2	100/88										20	-17.5	5	69.5	87
																				50	-23.5	5	65	88.5
																				100	-42.5	5	63	105.5
																				200	-66	5	62.2	128
									ARLIS 5 H3	30/18										20	-28.5	3	69.5	98
																				50	-36	3	65	101
																				100	-53.5	3	63	116.5
																				200	-77	3	62.2	139
C	8 APR 70	T3	MK 14 MK 61 (special)	56.8/46.3	200/188	84.28	112.68 W	2100	ARLIS 5 H3	30/18	73.07	152.8 W	3800	775	2.3	0	95	3618	2050	10	-46	1	72.2	118
																				20	-52.5	1	69.5	122
																				50	-68.5	1	65	133.5
C	25 APR 70	T3	MK 14 MK 61 (special)	56.8/46.3	200/188	84.27	112.58 W	2100	ARLIS 5 H3	200/188	73.33	156.0 W	3500	780	2.3	0	90	3507	2050	10	-28	1	72.2	100
																				20	-32	2	69.5	101.5
																				50	-58.5	1	65	123.5
																				100	-86.5	1	63	149.5
									ARLIS 5 H2	100/88										10	-34	3	72.2	106
																				20	-36.5	3	69.5	106
																				50	-58.5	3	65	123.5
																				100	-86.5	3	63	149.5
									ARLIS 5 H3	30/28										10	-48.5	2	72.2	120.5
																				20	-48.5	2	69.5	118
																				50	-68.5	2	65	133.5

200'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH WITH DEPTH ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	4 MAY 70	ARLIS 6	MK 14 + MK 61 (special)	56.8 / 46.3	200 / 188	74.68	163.13 W	1300	ARLIS 5 H3	30 / 18	73.4	156.22 W	2000	124	2	16	0	2091	600	10	-34	3	72.2	106
																				20	-33.5	3	69.5	103
																				50	-35.5	3	65	100.5
																				100	-49.5	3	63	112.5
																				200	-75	3	62.2	137
C	2 MAY 70	ARLIS 6	MK 14 + MK 61 (special)	56.8 / 46.3	200 / 188	74.47	162.22 W	1000	ARLIS 5 H1	200 / 188	73.32	156.53 W	3200	115	2	16	0	1984	600	10	-15	2	72.2	87
																				20	-12.5	2	69.5	82
																				50	-16.5	2	65	81.5
																				100	-36.5	2	63	99.5
																				200	-55	2	62.2	117
									ARLIS 5 H1	100 / 88										10	-24.5	2	72.2	96.5
																				20	-26.5	2	69.5	96
																				50	-23.5	2	65	88.5
																				100	-43.5	2	63	106.5
																				200	-62	2	62.2	124
									ARLIS 5 H1	30 / 18										10	-39	2	72.2	111
																				20	-35.5	2	69.5	105
																				50	-37.5	2	65	102.5
																				100	-52.5	2	63	115.5
																				200	-76	2	62.2	138

200'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	3 MAY 70	9.3 nmi. A/C Station	MK 14 MK 61 (special)	56.8/46.3	200/188	-	-	3500	ARLIS 5 H2	100/88	73.4	157.3 W	3500	9.3	2	0	0	3500	3500	10	-6.8	1	72.2	79
																				20	-6.5	1	69.5	76
																				50	-0.5	1	65	65.5
																				100	-7.9	1	63	71
																				200	-14.5	1	62.2	76.5
		20 nmi A/C Station												20						10	-	-	-	-
																				20	-9.5	1	69.5	79
																				50	-4.5	1	65	69.5
																				100	-13.1	1	63	76
																				200	-23.5	1	62.2	85.5
C	20 APR 70	ARLIS 5	MK 14 MK 61 (special)	56.8/46.3	200/188	73.17	155.52 W	3400	ARLIS 6 H1	200/188	74.33	161.67 W	1500	130	2	15	30	2407	600	10	-15	1	72.2	87
																				20	-16	1	69.5	85.5
																				50	-18.5	1	65	83.5
																				100	-33.5	1	63	96.5
																				200	-52	1	62.2	114
C	29 APR 70	ARLIS 6	MK 14 MK 61 (special)	56.8/46.3	200/188	74.68	163.13 W	1300	ARLIS 5 H1	200/188	73.4	156.22 W	2000	124	2	16	0	2091	600	10	-13	2	72.2	85
																				20	-13.5	2	69.5	83
																				50	-17.5	2	65	82.5
																				100	-36.5	2	63	99.5
																				200	-61	2	62.2	123
									ARLIS 5 H2	100/188										10	-22	3	72.2	94
																				20	-19.5	3	69.5	89
																				50	-22.5	3	65	87.5
																				100	-41.5	3	63	104.5
																				200	-63	3	62.2	125

200'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	24 APR 70	T3	MK 14 + MK 61 (special)	56.8 / 52	200 / 188	84.29	112.63 W	1500	ARLIS 5 H3	30 / 18	73.07	151.8 W	3700	760	2	0	95	3455	1500	10	-51	1	72.9	124
																				20	-53.5	1	70.2	123.5
																				50	-67.8	1	68.5	136.5
C	20 APR 70	ARLIS 6	MK 61 (special)	1.8 / 1.58	200 / 188	74.33	161.67 W	1500	ARLIS 5 H1	200 / 188	73.12	154.97 W	3400	130	2	15	30	2407	600	10	-33	1	48.6	81.5
																				20	-28	1	56	84
																				50	-34	1	50.5	84.5
																				100	-51.4	1	50	101.5
																				200	-	-	-	-
									H2	100 / 88										10	-41	1	48.6	89.5
																				20	-35	1	56	91
																				50	-38.5	1	50.5	89
																				100	-54.6	1	50	104.5
																				200	-	-	-	-
									H3	30 / 18										10	-52	1	48.6	100.5
																				20	-48	1	56	104
																				50	-52	1	50.5	102.5
																				100	-63.1	1	50	113

200'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	26 APR 70	OPAL 3	CW NRAP	-	200/190	87.094	77.143 W	2400	NAVOCEANO P3 SONOBUOY POSIT A1	60/50	88.25	62.0 W	2000	70	3.2	0	20	2400	2000	20	67.3	1	169.9	102.5
																				25	79.3	1	172.4	93
																				31.5	78.5	1	171.2	92.5
																				31.5	77.4	1	171.2	94
										400/390										31.5	78.3	1	171.2	93
																				31.5	72.8	1	171.2	98.5
									POSIT A2	400/390	88.8	58 W	1600	113	3.0	0	20	2225	1500	25	75.8	1	172.4	96.5

APPENDIX NO. 3

TL Data for Source Depth 91.4 m (300 ft) Below Sea Level

(Note: In the following tabulations, where an entry is absent, the value has not changed from the previous entry in the column.)

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	26 APR 80	NUSC CAMP 1	HLF 3 CW	-	300/290	88.84	18.65 W	4150	OPAL 2	100/90	87.24	59.65 W	2800	122	2.9	0	10	2732	1400	20	74.3	3	172.1	98
																				50	62.4	2	181.6	119
																				100	62.8	1	193.4	130.5
	21 APR 80																			30	70.6	3	175.9	105.5
	24 APR 80																			40	69.1	3	179.1	110
																				45	66.8	4	180.6	114
C	20 APR 80	TT3 STATION 1	55 lb TNT + MK 82	56.8/-	300/290	80.95	6.13 W	3000	OPAL 2	100/90	87.24	59.65 W	2800	464	3.2	10	0	2565	800	5	-50.4	1	71	121.5
																				10	-36.2	1	74.5	110.5
																				20	-41.1	1	72	113
F		TT3 STATION 2				80.9	00.82 E	3300						486	3.0	2	2	2454	900	5	-61.7	1	71	132.5
																				10	-41.2	1	74.5	115.5
																				20	-40.9	1	72	113
																				50	-70.6	1	60	130.5
																				5	-62.7	1	71	133.5
																				10	-40.7	1	74.5	115
																				20	-40.3	1	72	112.5
		TT3 STATION 3				80.97	06.1 E	750						497	2.7	11	5	2622	750	5	-57.6	1	71	128.5
																				10	-37.4	1	74.5	112
																				20	-38.9	1	72	111
																				50	-66.5	1	60	126.5
																				5	-57.4	1	71	128.5
																				10	-37.9	1	74.5	112.5
																				20	-38.7	1	72	110.5
																				50	-64	1	60	124

1

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	20 APR 80	TT3 STATION 4	55 lb TNT + MK 82	56.8/-	300/290	81.05	12.1 E	1400	OPAL 2	100/90	87.24	59.65 W	2800	510	2.5	4	6	2709	950	5	-64.8	1	71	136
																				10	-44.8	1	74.5	119.5
																				20	-42.7	1	72	114.5
																				50	-64.7	1	60	124.5
																				5	-62.3	1	71	133.5
																				10	-44.8	1	74.5	119.5
																				20	-42.5	1	72	114.5
																				50	-64.7	1	60	124.5
C	21 APR 79	ICEMAN	MK 82	1.8/-	300/290	88.83	180	3950	OPAL 1	100/90	86.83	60.58 W	2100	233	2.9	0	35	2977	2100	10	-59.2	1	47.5	106.5
																				20	-45.2	1	55.1	100.5
																				50	-63	1	52.8	116
										300/290										10	-48.9	1	47.5	96.5
																				20	-41	1	55.1	96
																				50	-66.2	1	52.8	119
	27 APR 79									100/90										10	-52.6	1	47.5	100
																				20	-44.4	1	55.1	99.5
																				50	-58.3	1	52.8	111

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	26 APR 80	CAMP 1	55 lb TNT + MK 82	56.8 / -	300 / 290	88.84	18.65 W	4150	OPAL 2	100 / 90	87.24	59.65 W	2800	122	2.9	0	10	2732	1400	5	-50.4	1	71	121.5
																				10	-30.9	1	74.5	105.5
																				20	-25.1	1	72	97
																				50	-35.3	1	67	102.5
																				100	-58.7	1	64.5	123
																				5	-50.3	1	71	121.5
																				10	-30.4	1	74.5	105
																				20	-24.9	1	72	97
																				50	-34.1	1	67	101
																				100	-59.3	1	64.5	124
																				200	-75.2	1	63.8	139
C	16 APR 80	FRAM 2	55 lb TNT + MK 82	56.8 / -	300 / 290	86.43	23.42 W	4100	OPAL 2	100 / 90	87.24	59.65 W	2800	127	3.3	0	30	2854	1300	5	-42	1	71	113
																				10	-26	1	74.5	100.5
																				20	-22.8	1	72	95
																				50	-36.5	1	60	96.5
																				100	-62.3	1	64.5	127
																				200	-75.1	1	63.8	139
	17 APR 80																			5	-43.2	1	71	114
																				10	-24.9	1	74.5	99.5
																				20	-23.5	1	72	95.5
																				50	-36.9	1	60	97
																				100	-65.5	1	64.5	130

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	22 APR 80	NRL CAMP 2	CW	-	300/288	82.83	97.4 W	1500	OPAL 2	100/90	87.24	59.65 W	2800	316	3.7	0	12	2108	1500	25.6	73.7	5	192.3	118.6
	23 APR 80																			19.1	76.2	5	187.6	111.5
	24 APR 80																			25.6	74.3	5	192.3	118
																				30	77.2	6	195	118
C	20 APR 80	CAMP 2 HELO	MK 82	1.8/-	300/288	83.72	107.47	2250	OPAL 2	100/90	87.24	59.65 W	2800	292	3.4	0	30	2062	1350	10	35.2	1	47.5	112.5
																				20	48.1	1	55.1	107
																				50	27.3	1	52.8	125.5
C	26 APR 80	CAMP 1	MK 82	1.8/-	300/288	88.84	18.65 W	4150	OPAL 2	100/90	87.24	59.65 W	2800	122	2.9	0	10	2732	1400	5	-63.5	1	40	103.5
																				10	-60.3	1	47.5	108
																				20	-45.7	1	55.1	101
																				50	-53	1	52.8	106
																				100	-74.9	1	51.8	126.5
																				200	-92.5	1	50.1	142.5
																				5	-50.4	1	40	90.5
																				10	-57.9	1	47.5	105.5
																				20	-39.4	1	55.1	94.5
																				50	-50.4	1	52.8	103
																				100	-75.3	1	51.8	127

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	19 APR 82	TRISTAN (NUSC)	CW HLF-3	-	300/290	83.68	5.68 W	3000	FRAM IV	295/285	83.5	14E	3500	136	2.1	0	4	3200	3000	15		2		87
																				20		2		85
																				30		2		93
																				45		2		104
																				65		2		107
																				75		2		120
										1476/1466										15		1		85.5
																				20		1		95
																				30		1		97.5
																				45		1		103
																				65		1		98
																				75		1		106
										3149/3139										15		1		89
																				20		1		95.5
																				30		1		93.5
																				45		1		101.5
																				65		1		106.5
																				75		1		101

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	17 APR 82	TRISTAN	CW HLF-3	-	300/290	83.68	5.68 W	3000	EMERALD	100/90	83	48.82 E	2400	367	2.1	0	35	3400	2400	17.25	65.9	1		177.6	111.5
																				30	69.3	1		182.6	113.5
																				55	62.3	1		186.2	124
																				47	60.2	1		186.4	126
																				53.25	57.1	1		187.1	130
																				53.25	57.4	1		187.1	129.5
																				53.25	58.6	1		187.1	128.5
																				47	69.2	1		186.4	117
																				47	70.4	1		186.4	116
																				47	70.7	1		186.4	115.5
	18 APR 82																			47	68.8	1		186.4	117.5
																				23.5	63.3	1		179.6	116.5
																				53.25	57.9	1		187.1	129

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	27 APR 79	FRAM 1	MK 82	1.8/-	300/290	84.47	09.49 W	4000	OPAL 1	100/90	86.83	60.58 W	2000	259	3.4	9	3	2660	900	10	-60.2	1	47.5	107.5
																				20	-49.1	1	55.1	104
																				50	-68.3	1	52.8	121
	20 APR 79									300/299										10	-51.7	1	47.5	99
																				20	-47.8	1	55.1	103
																				50	-70.3	1	52.8	123
	19 APR 79									100/90										10	-59.2	1	47.5	106.5
																				20	-50.4	1	55.1	105.5
	20 APR 79									100/90										5	-64.4	1	40	104.5
																				10	-62.7	1	47.5	110
																				20	-53.1	1	55.1	108
																				50	-66.5	1	52.8	119.5
	21 APR 79									100/90										10	-59.3	1	47.5	107
																				20	-52.7	1	55.1	108
										300/290										10	-52.6	1	47.5	100
																				20	-48.9	1	55.1	104

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	26 APR 79	FRAM 1	55 lb TNT MK+82	56.8/-	300/290	84.47	9.49 W	4000	OPAL 1	100/90	86.83	60.58 W	2000	259	3.4	9	3	2660	900	5	-48.9	1	71	120
																				10	-34.4	1	74.5	109
																				20	-31.1	1	72	103
																				50	-53.4	1	67	120.5
	27 APR 79																			5	-50.8	1	71	122
																				10	-35.4	1	74.5	110
																				20	-32.3	1	72	104.5
																				50	-53.7	1	67	120.5
	20 APR 79																			10	-36	1	74.5	110.5
																				20	-38.7	1	72	110.5
																				50	-54.4	1	67	121.5
	19 APR 79																			5	-56.3	1	71	127.5
																				10	-34	1	74.5	108.5
																				20	-33.7	1	72	105.5
																				50	-54.7	1	67	121.5
	21 APR 79																			5	-57.5	1	71	128.5
																				10	-32.9	1	74.5	107.5
																				20	-38.9	1	72	111
																				50	-58.3	1	67	125.5
										300/290										5	-47.7	1	71	118.5
																				10	-25.9	1	74.5	100.5
																				20	-31.1	1	72	103
																				50	-56	1	67	123
																				5	-50.9	1	71	122
																				10	-27	1	74.5	101.5
																				20	-31.8	1	72	104
																				50	-59.4	1	67	126.5

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	26 APR 79	ICEMAN	55 lb TNT + MK 82	56.8/-	300/290	88.3	180	3950	Opal 1	100/90	86.83	60.58 W	2100	233	2.9	0	35	2977	2100	10	-27.6	1	74.5	102
																				20	-29.5	1	72	101.5
																				50	-41	1	67	108
	21 APR 79																			10	-28.2	1	74.5	102.5
																				20	-28.1	1	72	100
																				50	-54.5	1	67	121.5
	19 APR 79																			10	-26.9	1	74.5	101.5
																				20	-31.1	1	72	103
																				50	-42.8	1	67	110
																				100	-68.4	1	64.5	133
																				200	-75	1	63.8	139
	20 APR 79																			20	-33.7	1	72	105.5
																				50	-50.7	1	67	117.5
																				20	-31.8	1	72	104
	27 APR 79																			5	-49.6	1	71	120.5
																				10	-28	1	74.5	102.5
																				20	-30	1	72	102
																				50	-41	1	67	108
	21 APR 79									300/290										5	-42.4	1	71	113.5
																				10	-20.8	1	74.5	95.5
																				20	-22.4	1	72	94.5
																				50	-52.4	1	67	119.5

APPENDIX NO. 4

TL Data for Source Depth 121.9 m (400 ft) Below Sea Level

(Note: In the following tabulations, where an entry is absent, the value has not changed from the previous entry in the column.)

400'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	14 APR 70	ARLIS 6	MK 61 (special)	1.8 / 1.58	400 / 388	74.13	159.6	800	ARLIS 5	200 / 188	73.05	152.77	3800	124	2	7	30	3407	800	10	-36.3	1	43.6	80
																				20	-28.5	1	50	78.5
																				50	-32.9	1	52	85
																				100	-48.2	1	50	98
										100 / 88										10	-42.9	1	43.6	86.5
																				20	-34.9	1	50	85
																				50	-36.9	1	52	89
																				100	-50.7	1	50	100.5
										30 / 18														
																				20	-48.2	1	50	98
																				50	-48.6	1	52	100.5
																				100	-56.9	1	50	107
	12 APR 70									200 / 188										10	-36.3	2	43.6	80
																				20	-33.1	2	50	83
																				50	-37.4	2	52	89.5
																				100	-48	2	50	98
										100 / 88										10	-43.4	2	43.6	87
																				20	-38.3	2	50	88.5
																				50	-37.3	2	52	89.5
																				100	-50.8	2	50	101
										30 / 18										10	-58.5	2	43.6	102
																				20	-52.6	2	50	102.5
																				50	-50	2	52	102
																				100	-58.2	2	50	108

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400'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	14 APR	T 3	55 lb TNT MK+61 (Special)	56.8	400/388	84.28	112.68 W	2100	ARLIS 5	200/188	73.05	152.77 W	3800	775	2.3	0	92	3618	2050	10	-24.4	1	74.7	99
																				20	-30.1	1	72.5	102.5
																				50	-54.4	1	68.2	122.5
										100/88										10	-31.4	1	74.7	106
																				20	-36.8	1	72.5	109.5
																				50	-55.2	1	68.2	123.5
										30/18										10	-45.2	1	74.7	120
																				20	-49.6	1	72.5	122
																				50	-68	1	68.2	136
C	20 APR 79	ARLIS 6	MK 61 (special)	1.8/1.58		74.33	161.67	1500	ARLIS 5	200/188	73.17	155.52 W	3400	130	2	15	30	2407	600	10	-36	1	43.6	79.5
																				20	-29	1	50	79
																				50	-32	1	52	84
																				100	-50.4	1	50	100.5
	3 MAY 79	9.3 A/C	MK 14 MK+61 (special)	56.8/46.3		—	—	3500		100/88	73.4	157.3	3500	9.3	2	0	0	3500	3500	10	-10	1	73.7	83.5
																				20	-5	1	71.5	76.5
																				50	-9	1	67.2	76
																				100	-13	1	64	77
																				200	-18	1	62.9	81
		20 A/C												20						20	-6	1	71.5	77.5
																				50	-8	1	67.2	75
																				100	-16.3	1	64	80.5
																				200	-23	1	62.9	86
	9 MAY 79	ARLIS 5				73.17	155.52 W	3900	ARLIS 6	200/188	74.33	161.67 W	1500	130	2	15	30	2407	600	10	-9.5	1	73.7	83
																				20	-12	1	71.5	83.5
																				50	-21.5	1	67.2	88.5
																				100	-28.5	1	64	92.5
																				200	-45	1	62.9	108

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400'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH WITH DEPTH ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	29 APR 70	ARLIS 6	MK 14 + MK61 (special)	56.8 / 46.3	400 / 388	74.68	163.13 W	1300	ARLIS 5	200 / 188	73.4	156.22 W	2000	124	2	16	0	2091	600	10	-12	1	73.7	85.5
																				20	-12	1	71.5	83.5
																				50	-20.5	1	67.2	87.5
																				100	-37.5	1	64	101.5
																				200	-53	1	62.9	116
										100 / 88										10	-20	2	73.7	93.5
																				20	-21	2	71.5	92.5
																				50	-24	2	67.2	91
																				100	-40.5	2	64	104.5
																				200	-67	2	62.9	130
										30 / 18										10	-34	2	73.7	107.5
																				20	-34	2	71.5	105.5
																				50	-37	2	67.2	104
																				100	-47.5	2	64	111.5
																				200	-78	2	62.9	141
	27 APR 70	ARLIS 6				74.47	162.22	1000	ARLIS 5	200 / 188	73.32	156.53	3200	115	2	16	0	1984	600	10	-10	1	73.7	83.5
																				20	-12	1	71.5	83.5
																				50	-16.5	2	67.2	83.5
																				100	-36.5	2	64	100.5
																				200	-56	2	62.9	190
										100 / 88										10	-19.5	1	73.7	93
																				20	-20	1	71.5	91.5
																				50	-25	2	67.2	92
																				100	-39.5	2	64	103.5
																				200	-53	2	62.9	115
										30 / 18										10	-33	1	73.7	106.5
																				20	-33	1	71.5	104.5
																				50	-38	2	67.2	105
																				100	-52.5	2	64	116.5
																				200	-75	2	62.9	138

400'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	6 MAY 70	ARLIS 6	MK 14 + MK 61 (special)	56.8 / 46.3	400 / 388	74.63	164.17 W	400	ARLIS 5	200 / 188	73.43	156.82	3200	150	2	31	0	1705	400	10	-9.5	1	73.7	83
																				20	-11	1	71.5	82.5
																				50	-19	2	67.2	86
																				100	-38.5	3	64	102.5
																				200	-59	3	62.9	122
										100 / 88										10	-18	1	73.7	91.5
																				20	-19.5	1	71.5	91
																				50	-22	3	67.2	89
																				100	-40.5	3	64	104.5
																				200	-65	3	62.9	128
										30 / 18										10	-32	1	73.7	105.5
																				20	-34	1	71.5	105.5
																				50	-35	2	67.2	102
																				100	-51.5	3	64	115.5
																				200	-74.5	1	62.9	137.5

400'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	9 MAY 70	T 3	MK 14 MK*61 (special)	56.8 46.3	400/388	84.12	112.67 W	2000	ARLIS 5	200/188	73.65	159.25 W	2000	760	2.3	3	55	2935	850	10	-26.5	1	73.7	100
																				20	-33	1	71.5	104.5
																				50	-65	1	67.2	132
										100/88										10	-34	1	73.7	107.5
																				20	-40	1	71.5	111.5
																				50	-69	1	67.2	136
										30/18										10	-47	1	73.7	120.5
																				20	-53.5	1	71.5	125
																				50	-82	1	67.2	149
C	8 APR 70					84.28	112.68	2100	ARLIS 5	200/188	73.07	152.8	3800	775	2.3	0	95	3618	2050	10	-22	1	73.7	95.5
																				20	-29	1	71.5	100.5
																				50	-58	1	67.2	125
																				100	-90.5	1	64	154.5
										100/88										10	-29	1	73.7	102.5
																				20	-36.5	1	71.5	108
																				50	-60.5	1	67.2	127.5
																				100	-90.5	1	64	154.5
										30/18										10	-43	1	73.7	116.5
																				20	-18.5	1	71.5	120
																				50	-74	1	67.2	141
																				100	-90.5	1	64	154.5
																				10	-43	1	73.7	116.5
																				20	-48.5	1	71.5	120
																				50	-74	1	67.2	141

5

400'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	25 APR 70	T3	MK 14 + MK 61 (Special)	56.8/46.3	400/388	84.27	112.58	2100	ARLIS 5	200/188	73.33	156.0 W	3500	780	2.3	0	90	3507	2050	10	-24	2	73.7	97.5
																				20	-29	1	71.5	100.5
																				50	-62	1	67.2	129
																				100	-89.5	1	64	153.5
										100/88										10	-30.5	1	73.7	104
																				20	-38	1	71.5	109.5
																				50	-62	4	67.2	129
																				100	-89.5	1	64	153.5
										30/18										10	-45	2	73.7	118.5
																				20	-49.5	2	71.5	121
																				50	-72	3	67.2	139.5
C	28 APR 70	T3				84.3	112.5	2000	ARLIS 6	200/188	74.7	163.13 W	1615	748	2.4	0	55	2831	1200	10	-26	1	73.7	99.5
																				20	-33	1	71.5	104.5
																				50	-64	2	67.2	131
										100/88										10	-34	2	73.7	107
																				20	-39.5	2	71.5	111
																				50	-68.5	2	67.2	135.5

400'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1600 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	25 APR 70	T3	MK 14 MK 61+ (special)	56.8 / 46.3	400 / 388	84.27	112.58	2100	ARLIS 6	200 / 188	74.65	162.2 W	1700	740	2.4	1	53	2614	1000	10	-26	1	73.7	99.5
																				20	-33	1	71.5	104.5
																				50	-64	2	67.2	131
										100 / 88										10	-34	2	73.7	107
																				20	-39.5	2	71.5	111
																				50	-68.5	2	67.2	135.5
C	9 APR 70	T3				84.12	112.67 W	2000	ARLIS 6	200 / 188	74.68	165.33	500	755	2.4	4.5	53	2632	500	10	-24.5	1	73.7	98
																				20	-29	1	71.5	100.5
																				50	-60	1	67.2	127
										100 / 88										10	-31	1	73.7	104.5
																				20	-37	1	71.5	108.5
																				50	-67.5	1	67.2	134.5

400'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	22 APR 70	ARLIS 6	MK 14 + MK 61 (special)	56.8 / 46.3	400 / 388	74.65	164.08 W	1000	ARLIS 5	100 / 88	73.22	156.18 W	2550	160	2	15	0	1831	600	10	-19.5	1	73.7	93
																				20	-20	1	71.5	91.5
																				50	-25	1	67.2	92
																				100	-39.5	1	64	103.5
																				200	-53	1	62.9	116
										30 / 18										10	-33	1	73.7	106.5
																				20	-33	1	71.5	104.5
																				50	-38	1	67.2	105
																				100	-52.5	1	64	116.5
																				200	-75	1	62.9	138

APPENDIX NO. 5

TL Data for Source Depth 182.9 m (600 ft) Below Sea Level

(Note: In the following tabulations, where an entry is absent, the value has not changed from the previous entry in the column.)

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	14 APR 70	T3	MK 14 MK 61 (special)	56.8 -	600 588	84.28	112.68 W	2100	ARLIS 5	200 188	73.05	152.77 W	3800	775	2.3	0	92	3618	2050	10	-24.1	1	71.9	96
																				20	-29.1	1	74.1	103
																				50	-52.5	1	70.5	123
										100 88										10	-31.6	1	71.9	103.5
																				20	-35.9	1	74.1	110
																				50	-54.3	1	70.5	125
										30 18										10	-45	1	71.9	117
																				20	-49	1	74.1	123
																				50	-67.9	1	70.5	138
C	20 APR 70	ARLIS 6	MK 61 (special)	1.8 1.58	600 588	74.33	161.67	1500	ARLIS 5	200 188	73.17	155.52 W	3400	130	2	15	30	2407	600	10	-39	1	43.6	82.5
																				20	-33	1	50	83
																				50	-32	1	52	84
																				100	-51.4	1	50	101.5
										100 88										10	-46	1	43.6	90
																				20	-39	1	50	89
																				50	-36.5	1	52	88.5
																				100	-53.9	1	50	104
										30 18										10	-62	1	43.6	105.5
																				20	-52.5	1	50	102.5
																				50	-50	1	52	102
																				100	-62.9	1	50	113

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	3 MAY 70	9.3 nmi AK STA	MK 14 + MK 61 (special)	56.8 / 46.3	600 / 588	-	-	3500	ARLIS 5	100 / 88	73.4	157.3	3500	9.3	2	0	0	3500	3500	10	0	1	70.4	70.5
																				20	0	1	72.6	72.5
																				50	-5	1	69	64
																				100	-4.7	1	65.5	70
																				200	-15	1	63	78
		20 nmi AK STA												20										
																				20	-6	1	72.6	78.5
																				50	-8	1	69	77
																				100	-15.9	1	65.5	81.5
																				200	-24	1	63	87
C	20 APR 70	ARLIS 5				73.17	155.52 W	3400	ARLIS 6	200 / 188	74.33	161.67	1500	130	2	15	30	2407	600	10	-8	1	70.4	79
																				20	-11	2	72.6	83.5
																				50	-20	2	69	89
																				100	-27.5	2	65.5	93
																				200	-42	2	63	105
										100 / 88										10	-16	1	70.4	86.5
																				20	-17	1	72.6	89.5
																				50	-22	1	69	91
																				100	-34.5	1	65.5	100
																				200	-47	1	63	110

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	29 APR 70	ARLIS 6	MK 14 + MK 61 special)	56.8 / 46.3	600 / 588	74.68	163.13 W	1300	ARLIS 5	200 / 188	73.4	156.22 W	2000	124	2	16	0	2091	600	10	-9	1	74.4	79.5
																				20	-11	1	72.6	83.5
																				50	-18	2	69	87
																				100	-38.5	2	65.5	104
																				200	-57	2	63	120
										100 / 88										10	-16	1	70.4	86.5
																				20	-16	1	72.6	88.5
																				50	-22	2	69	91
																				100	-41.5	2	65.5	107
																				200	-67	2	63	130
										30 / 18										10	-31.5	1	70.4	102
																				20	-32	1	76.6	104.5
																				50	-35	2	69	105
																				100	-49.5	2	65.5	115
																				200	-72	2	63	135

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	27 APR 70	ARLIS 6	MK 14 + MK 61 (special)	56.8 / 46.3	600 / 588	74.47	162.22 W	1000	ARLIS 5	200 / 188	73.32	156.53 W	3200	115	2	16	0	1984	600	10	-10.5	1	74.4	81
																				20	-12	1	72.6	84.5
																				50	-22.5	2	69	91.5
																				100	-39.5	2	65.5	105
																				200	-58	1	63	121
										100 / 88										10	-17.5	1	70.4	88
																				20	-18.5	1	72.6	91
																				50	-26	2	69	95
																				100	-43.5	2	65.5	109
																				200	-68	1	63	131
										30 / 18										10	-32	1	70.4	102.5
																				20	-32	1	72.6	104.5
																				50	-40	2	69	109
																				100	-52.5	2	65.5	118
																				200	-73	1	63	136

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE INT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	6 MAY 70	ARLIS 6	MK 14 + MK 61 (special)	56.8 / 46.3	600 / 588	74.63	164.17 W	400	ARLIS 5	200 / 188	73.43	156.82	3200	150	2	31	0	1705	400	10	-8	1	70.4	78.5
																				20	-11	1	72.6	83.5
																				50	-16	3	69	85
																				100	-39.5	3	65.5	105
																				200	-63	4	63	126
										100 / 88										10	-15.5	1	70.4	86
																				20	-19	1	72.6	91.5
																				50	-21.5	3	69	90.5
																				100	-41.5	3	65.5	107
																				200	-65	4	63	128
										30 / 18										10	-29.5	1	70.4	100
																				20	-33	1	72.6	105.5
																				50	-37	3	69	106
																				100	-42.5	3	65.5	108
																				200	-77	4	63	140

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	9 MAY 70	T3	MK 14 MK+61 (special)	56.8 / 46.3	600 / 588	84.12	112.67 W	2000	ARLIS 5	200 / 188	73.65	159.25 W	2000	760	2.3	3	55	2935	850	10	-26	1	70.4	96.5
																				20	-31	1	72.6	103.5
																				50	-61	1	69	130
										100 / 88										10	-32.5	1	70.4	103
																				20	-39	1	72.6	111.5
																				50	-66	1	69	135
										30 / 18										10	-45.5	1	70.4	116
																				20	-52	1	72.6	125
																				50	-78	1	69	147
C	8 APR 70					84.28	112.68 W	2100	ARLIS 5	200 / 188	73.07	152.8	3800	775	2.3	0	95	3618	2050	10	-21	1	70.4	91.5
																				20	-28	1	72.6	100.5
																				50	-58	1	69	127
																				100	-87.5	1	65.5	153
										100 / 88										10	-29	1	70.4	99.5
																				20	-35.5	1	72.6	108
																				50	-60	1	69	129
																				100	-87.5	1	65.5	153
										30 / 18										10	-42.5	1	70.4	113
																				20	-48	1	72.6	120.5
																				50	-73	1	69	142

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	25 APR 70	T3	MK 14 + MK 61 (special)	56.8 / 46.3	600 / 588	84.27	112.58	2100	ARLIS 5	200 / 188	73.33	156.0 W	3500	780	2.3	0	90	3507	2050	10	-22	2	70.4	92.5
																				20	-30	2	72.6	102.5
																				50	-59	2	69	128
																				100	-89.5	2	65.5	155
										100 / 88										10	-30	3	70.4	100.5
																				20	-35	3	72.6	107.5
																				50	-60	3	69	129
																				100	-89.5	3	65.5	155
										30										10	-43.5	2	70.4	114
																				20	-49.5	2	72.6	122
																				50	-72	2	69	141
C	28 APR 70	T3				84.3	112.5	2000	ARLIS 6	200 / 188	74.7	163.13 W	1615	748	2.4	0	55	2831	1200	10	-24	2	70.4	99.5
																				20	-30	2	72.6	102.5
																				50	-62.5	2	69	131.5
										100 / 88										10	-31	2	70.4	101.5
																				20	-38	2	72.6	110.5
																				50	-68	2	69	137
										30 / 18										10	=52	1	70.4	122.5
																				20	-58	1	72.6	130.5
																				50	-87	1	69	156

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF -- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	25 APR 70	T3	MK 14 MK 61 (special)	56.8 / 46.3	600 / 588	84.27	112.58	2100	ARLIS 6	200 / 188	74.65	162.2 W	1700	740	2.4	1	55	2798	1000	10	-24	1	70.4	94.5
																				20	-29	1	72.6	101.5
																				50	-59	1	69	128
										100 / 88										10	-31	1	70.4	101.5
																				20	-38	1	72.6	110.5
																				50	-62	1	69	131
	9 MAY 70	T3				84.12	112.67 W.	2000	ARLIS 6	200 / 188	74.68	165.33 W	500	755	2.4	4.5	55	2632	500	10	-22.5	1	70.4	93
																				20	-28	1	72.6	100.5
																				50	-66	1	69	135
										100 / 88										10	-29.5	1	70.4	100
																				20	-36	1	72.6	108.5
																				50	-70	1	69	139

600'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF -- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	22 APR 70	ARLIS 6	MK 14 + MK 61 (special)	56.8/46.3	600/588	74.65	164.08 W	1000	ARLIS 5	200/188	73.22	156.18 W	2550	160	2	15	0	1831	600	10	-10.5	1	70.4	81
																				20	-12	1	72.6	84.5
																				50	-22.5	1	69	91.5
																				100	-39.5	1	65.5	105
																				200	-58	1	63	121
										100/88										10	-17.5	1	70.4	88
																				20	-18.5	1	72.6	91
																				50	-26	1	69 95	
																				100	-43.5	1	65.5	109
																				200	-68	1	63	131
										30/18										10	-32	1	70.4	102.5
																				20	-32	1	72.6	104.5
																				50	-40	1	69	109
																				100	-52.5	1	65.5	118
																				200	-72	1	63	135

APPENDIX NO. 6

TL Data for Source Depth 243.8 m (800 ft) Below Sea Level

(Note: In the following tabulations, where an entry is absent, the value has not changed from the previous entry in the column.)

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	19 APR 77	A/C #1	MK 61	1.8 -	800 790	80.42	1.4 W	3800	PEARL H3	100 90	82.18	4.7 W	2400	109	2	0	0	3543	2400	10	-60	1	40.1	100
																				20	-50	1	47.2	97
																				50	-38.3	1	58	96.5
																				100	-53	1	52	105
																				200	-71.2	1	50.3	121.5
		A/C #2				80.28	00	2600	PEARL H3					120	2	0		3029	2400	10	-63.4	1	40.1	103.5
																				20	-51.5	1	47.2	98.5
																				50	-56.2	1	58	114
																				100	-54.8	1	52	107
																				200	-61.7	1	50.3	112
																				500	-73.7	1	46.8	120.5
		A/C #3				80.18	1.5 E	2400	PEARL H3					130.4	1.9	0		2786	2050	10	-54.7	1	40.1	95
																				20	-47.1	1	47.2	94.5
																				50	-40.5	1	58	98.5
																				100	-53.2	1	52	105
																				200	-70.2	1	50.3	120.5
																				500	-76.6	1	46.8	123.5

1

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF -- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	19 APR 77	A/C #3	MK 61	1.8 / -	800 / 790	80.18	1.5 E	2400	PEARL H4	100 / 90	82.18	4.7 W	2400	130.4	1.9	0	0	2786	2050	10	-55.5	1	40.1	95.5
																				20	-47.4	1	47.2	94.5
																				50	-41.3	1	58.0	99.5
																				100	-52.8	1	52	105
																				200	-72.5	1	50.3	123
		A/C #4				80.1	3 E	2150	PEARL H3					142	1.9	0		2499	1700	10	-62.2	1	40.1	102.5
																				20	-48.7	1	47.2	96
																				50	-41	1	58.0	99
																				100	-56.3	1	52	108.5
																				200	-70.1	1	50.3	120.5
																				500	-77.7	1	46.8	124.5
		A/C #4							PEARL H4											10	-58.5	1	40.1	98.5
																				20	-48.8	1	47.2	96
																				50	-41.9	1	58	100
																				100	-55.6	1	52	107.5
																				200	-70	1	50.3	120.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #6	MK 61	1.8/-	800/790	79.88	5.4E	1050	Pearl H3	100/90	82.18	4.7 W	2400	165.6	1.7	0	0	2056	1050	10	-60.9	1	40.1	101
																				20	-53.6	1	47.2	101
																				50	-45.4	1	58	103.5
																				100	-61.6	1	52	113.5
																				200	-75.4	1	50.3	125.5
		A/C #6							Pearl H4											20	-54.1	1	47.2	101.5
																				50	-46.2	1	58	104
																				100	-61.2	1	52	113
																				200	-73.9	1	50.3	124
		A/C #7				79.74	6.4 E	800	Pearl H3					178.2	1.6	30		1843	800	5	-67.3	1	33	100.5
																				10	-63.7	1	40.1	104
																				20	-53	1	47.2	100
																				50	-45.9	1	58	104
																				100	-61.6	1	52	113.5
																				200	-71.5	1	50.3	122
		A/C #7							Pearl H4											10	-61.4	1	40.1	101.5
																				20	-53.5	1	47.2	100.5
																				50	-46.7	1	58	104.5
																				100	-60.7	1	52	112.5
																				200	-72.5	1	50.3	113

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #8	MK 61	1.8/-	800/790	79.7	7.3 E	650	Pearl H3	100/90	82.18	4.7W	2400	187.5	1.6	48	0	1625	580	5	-66.8	1	33	100
																				10	-64.4	1	40.1	104.5
																				20	-52.3	1	47.2	99.5
																				50	-39.4	1	58	97.5
																				100	-58	1	52	110
																				200	-73.8	1	50.3	124
		A/C #9				79.78	7.6 E	590	Pearl H3					183	1.6	50		1607	580	20	-53	1	47.2	100
																				50	-43.5	1	58	101.5
																				100	-58	1	52	110
																				200	-77	1	50.3	127.5
		A/C #9							Pearl H4											20	-53.5	1	47.2	100.5
																				50	-44.1	1	58	102
																				100	-58	1	52	110
																				200	-77.7	1	50.3	128
		A/C #10				80.08	7.8 E	530	Pearl H3					168.8	1.8	55		1495	530	10	-66.9	1	40.1	107
																				20	-52.3	1	47.2	99.5
																				50	-46.8	1	58	105
																				100	-62.2	1	52	114
																				200	-86.6	1	50.3	137

4

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #10	MK 61	1.8/-	800/790	80.08	7.8 E	530	Pearl H4	100/90	82.18	4.7W	2400	168.8	1.8	55	0	1495	530	10	-66.5	1	40.1	106.5
																				20	-52.6	1	47.2	100
																				50	-47.9	1	58	106
																				100	-62.9	1	52	115
		A/C #11				80.37	8 E	850	Pearl H3					157	1.8	50		1643	800	20	-53.2	1	47.2	100.5
																				50	-45.8	1	58	104
																				100	-63.9	1	52	116
		A/C #11							Pearl H4											20	-53.3	1	47.2	100.5
																				50	-46.0	1	58	104.5
																				100	-66.4	1	52	118.5
		A/C #12							Pearl H3					143.8	1.9	4.4		1787	800	10	-60.3	1	40.1	100.5
																				20	-51.8	1	47.2	99
																				50	-47.5	1	58	105.5
																				100	-63.3	1	52	115.5
																				200	-86.1	1	50.3	136.4

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #13	MK 61	1.8/-	800/790	80.79	7 E	875	Pearl H3	100/90	82.18	4.7W	2400	131.8	1.9	38	0	1858	800	5	-65.9	1	33	99
																				10	-61.4	1	40.1	101.5
																				20	-52.2	1	47.2	99.5
																				50	-47.4	1	58	105.5
																				100	-58.5	1	52	110.5
																				200	-82.9	1	50.3	133
		A/C #13							Pearl H4											5	-67	1	33	100
																				10	-61.9	1	40.1	102
																				20	-52.2	1	47.2	99.5
																				50	-47.9	1	58	106
																				100	-59.4	1	52	111.5
																				200	-80.8	1	50.3	131
		A/C #15				80.96	4.5E	800	Pearl H3					107.8	1.9	28		1993	800	5	-61.3	1	33	94.5
																				10	-57.6	1	40.1	97.5
																				20	-51.8	1	47.2	99
																				50	-39.5	1	58	97.5
																				100	-52.2	1	52	104
																				200	-65.1	1	50.3	115.5
																				500	-77.5	1	46.8	124.5

900'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #16	MK 61	1.8/-	800/790	81.04	2.8E	960	Pearl H3	100/90	82.18	4.7W	2400	92.8	2	8	0	2171	960	10	-57.1	1	40.1	97
																				20	-46	1	47.2	93
																				50	-36	1	58	94
																				100	-48.5	1	52	100.5
																				200	-61.8	1	50.3	112
																				500	-70.1	1	46.8	117
		A/C #17				81.09	1.9E	1300	Pearl H3					85	2	0		2415	1300	5	-66.7	1	33	99.5
																				10	-54.8	1	40.1	95
																				20	-44.7	1	47.2	92
																				50	-38.1	1	58	96
																				100	-48.4	1	52	100.5
																				200	-60	1	50.3	110.5
																				500	-62.9	1	46.8	110
		A/C #17							Pearl H4											10	-55.2	1	40.1	95.5
																				20	-44.7	1	47.2	92
																				50	-38.8	1	58	97
																				100	-47.3	1	52	99.5
																				200	-60.8	1	50.3	111
																				500	-64.6	1	46.8	11..5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #18	MK 61	1.8/-	800/790	81.22	0.8W	2600	Pearl H4	100/90	82.18	4.7W	2400	65.1	2.1	0	0	2963	2400	10	-56.7	1	40.1	97
																				20	-42.6	1	47.2	90
																				50	-32.1	1	58	90
																				100	-46.8	1	52	99
																				200	-53.7	1	50.3	104
																				500	-58.1	1	46.8	105
		A/C #19				81.24	1.6W	3150	Pearl H3					60.6	2.2	0		3153	2400	20	-43.4	1	47.2	90.5
																				50	-27.9	1	58	86
																				100	-41.6	1	52	93.5
																				200	-50.1	1	50.3	100.5
																				500	-56.6	1	46.8	103.5
		A/C #19							Pearl H4											20	-44	1	47.2	91
																				50	-28.6	1	58	87
																				100	-42.1	1	52	94
																				200	-51	1	50.3	101.5
																				500	-56.9	1	46.8	103.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #20	MK 61	1.8/-	800/790	81.39	3.7W	3700	Pearl H3	100/90	82.18	4.7W	2400	46.8	22	0	0	3575	2400	10	-56.3	1	40.1	96.5
																				20	-39.3	1	47.2	86.5
																				50	-31.5	1	58	89.5
																				100	-40.6	1	52	92.5
																				200	-51.9	1	50.3	102
																				500	-55.7	1	46.8	102.5
									Pearl H4											10	-56.4	1	40.1	96.5
																				20	-40	1	47.2	87
																				50	-31.7	1	58	89.5
																				100	-40.4	1	52	92.5
																				200	-51.5	1	50.3	102
																				500	-55.6	1	46.8	102.5
C		A/C #21				81.54	2.4W	3250	Pearl				2400	44.5	2.7	0	0	3596	1600	20	-37.8	1	47.2	85
																				50	-29.8	1	58	88
																				100	-41.9	1	52	94
																				200	-51.2	1	50.3	101.5
																				500	-55.5	1	46.8	102.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	19 APR 77	A/C #22	MK 61	1.8/-	800/790	81.45	4W	350	Pearl	100/90	82.18	4.7W	2400	57.8	3	12	0	3000	350	100	-51.8	1	40.1	92
																				20	-42.1	1	47.2	89.5
																				50	-29.8	1	58	88
																				100	-42.5	1	52	94.5
																				200	-56.9	1	50.3	107
																				500	-68	1	46.8	115
	APR 77	Ruby				80.78	5W	3000	Pearl				2400	88.5	2.2	0	0	3546	2400	20	-42.6	1	47.2	90
																				50	-35.9	1	58	94
																				100	-55.1	1	52	107

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #2	MK 61	1.8/-	800/790	80.28	00	2600	Ruby H2	100/90	80.78	5W	3000	55.9	1.5	0	0	3457	2600	20	-42.1	1	47.2	89.5
																				50	-34.3	1	68	92.5
																				100	-43.1	1	52	95
																				200	-50.9	1	50.3	101
																				500	-57.7	1	46.8	104.5
		A/C #3				80.18	1.5E	2400						72.4	1.5	0	0	3270	2400	20	-43.8	1	47.2	91
																				50	-37.7	1	68	95.5
																				100	-45.9	1	52	98
																				200	-55.6	1	50.3	106
																				500	-62.9	1	46.8	109.5
		A/C #4				80.1	3E	2150	Ruby H6					88.1	1.4	0	0	3022	2100	10	-59.9	1	40.1	100
																				20	-45	1	47.2	92
																				50	-36.9	1	68.0	95
																				100	-49.4	1	52	101.5
																				200	-58.3	1	50.3	108.5
																				500	-65.4	1	46.8	112

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #6	MK 61	1.8/-	800/790	79.88	5.4E	1050	Ruby H6	100/90	80.78	5W	3000	116.3	1.3	0	0	2715	1050	20	-45.7	1	47.2	93
																				50	-35.8	1	58	94
																				100	-49.1	1	52	101
																				200	-59.9	1	50.3	110
																				500	-68.7	1	46.8	115.5
		A/C #7				79.74	6.4E	800						130.2	1.2	10	0	2578	800	10	-59.4	1	40.1	99.5
																				20	-45.7	1	47.2	93
																				50	-36.3	1	58	94.5
																				100	-46.2	1	52	98
																				200	-62.1	1	50.3	112.5
		A/C #8				79.7	7.3E	650	Ruby H2					141.8	1.2	18	0	2361	650	5	-61.6	1	33	94.5
																				10	-58.3	1	40.1	98.5
																				20	-49.1	1	47.2	96.5
																				50	-37.1	1	58	95
																				100	-49.5	1	52	101.5
																				200	-62.7	1	50.3	113
																				500	-77.6	1	46.8	124.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #8	MK 61	1.8/-	800/790	79.7	7.3E	650	Ruby H6	100/90	80.78	5W	3000	141.8	1.2	18	0	2361	650	10	-56	1	40.1	96
																				20	-47.2	1	47.2	94.5
																				50	35.9	1	58	94
																				100	-49.6	1	52	101.5
																				200	-63.7	1	50.3	114
		A/C #9				79.78	7.6E	590	Ruby H2					138.3	1.2	21	0	2286	580	5	-62.5	1	33	95.5
																				10	-61.9	1	40.1	102
																				20	-50.2	1	47.2	97.5
																				50	-39.1	1	58	97
																				100	-52.5	1	52	104.5
																				200	-67.5	1	50.3	118
																				500	-80.4	1	46.8	127
		A/C #9							Ruby H6											10	-60.1	1	40.1	100
																				20	-46.7	1	47.2	94
																				50	-37.6	1	58	95.5
																				100	-52.2	1	52	104
																				200	-65.1	1	50.3	115.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #10	MK 61	1.8/-	800/790	80.08	7.8E	530	Ruby H6	100/90	80.78	5W	3000	133	1.3	26	0	2235	530	20	-44	1	47.2	91
																				50	-35.3	1	[illegible]	93.5
																				100	-54	1	52	106
																				200	-69.6	1	50.3	120
		A/C #11				80.37	8E	850	Ruby H2					130.4	1.4	34	0	2152	650	20	-51.2	1	47.2	98.5
																				50	-43	1	58	101
																				100	-59.6	1	52	111.5
																				200	-75.1	1	50.3	125.5
		A/C #12				80.68	8.2E	900	Ruby H2					127.3	1.5	37	0	1996	800	5	-60.8	1	33	94
																				10	-62.1	1	40.1	102
																				20	-50.6	1	47.2	98
																				50	-43.7	1	58	101.5
																				100	-57.9	1	52	110
																				200	-75.1	1	50.3	125.5
		A/C #13				80.79	7E	875	Ruby H6					115.9	1.5	31	0	2062	800	10	-61	1	40.1	101
																				20	-47.1	1	47.2	94.5
																				50	-40.3	1	58	98.5
																				100	-56.5	1	52	108.5
																				200	-70.2	1	50.3	120.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #15	MK 61	1.8/-	800/790	80.96	4.5E	800	Ruby H6	100/90	80.78	5W	3000	91.7	1.6	17	0	2293	800	20	-43.7	1	47.2	91
																				50	-37	1	58	95
																				100	-45	1	52	97
																				200	-58.6	1	50.3	109
																				500	-76.4	1	46.8	123
		A/C #16				81.04	2.8E	960	Ruby H2					77.3	1.7	3	0	2573	960	10	-59.1	1	40.1	99
																				20	-44.2	1	47.2	91.5
																				50	-35.2	1	58	93
																				100	-48.1	1	52	100
																				200	-55.2	1	50.3	105.5
																				500	-63.2	1	46.8	100
		A/C #16							Ruby H8											20	-41.5	1	47.2	89
																				50	-33.8	1	58 92	
																				100	-46.3	1	52	98.5
																				200	-54.7	1	50.3	105
		A/C #17				81.09	1.9E	1300	Ruby H6					69.2	1.8	0	0	2779	1300	20	-42.2	1	47.2	89.5
																				50	-38.1	1	58	96
																				100	-45.6	1	52	97.5
																				200	-53.3	1	50.3	103.5

300'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) P.E SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF -- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	19 APR 77	A/C #18	MK 61	1.8/-	800/790	81.22	0.8W	2600	Ruby H2	100/90	80.78	5W	3000	50.8	1.9	0	0	3444	2600	20	-46.6	1	47.2	94
																				50	-38.3	1	58	96.5
																				100	-45.1	1	52	97
																				200	-56.2	1	50.3	106.5
																				500	-57.6	1	46.8	104.5
		A/C #19				81.24	1.6W	3150						46.8	1.9	0	0	3581	3000	20	-42.3	1	47.2	89.5
																				50	-38.7	1	58	96.5
																				100	-45.6	1	52	97.5
																				200	-54.2	1	50.3	104.5
																				500	-58.1	1	46.8	105
C		A/C #21				81.54	2.4W	3250	Ruby H6					55.7	2.3	0	0	2293	1600	10	-51.7	1	40.1	92
																				20	-43.9	1	47.2	91
																				50	-34.3	1	58	92.5
																				100	-37.2	1	52	89
																				200	-57.5	1	50.3	108
																				500	-60	1	46.8	107

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	19 APR 77	A/C #22	MK 61	1.8/-	800/790	81.45	4W	350	Ruby H6	100/90	80.78	5W	3000	59.2	2.5	70	0	969	350	20	-47	1	47.2	94
																				50	-39.4	1	58	97.5
																				100	-51.8	1	52	104
																				200	-75.9	1	50.3	126
F	25 APR 77	A/C #24				83.55	15.2E	3500	Ruby H6					215	2	0	25	2746	2000	20	-57	1	45.2	102
																				50	-48.6	1	58	106.5
C	25 APR 77	Pearl				82.18	4.7W	2400	Ruby H2					88.5	2.2	0	0	3518	2400	20	-47.4	1	47.2	94.5
																				50	-40.7	1	58	98.5
																				100	-55.5	1	52	107.5
																				200	-68.7	1	50.3	119
																				500	-71.9	1	46.8	118.5

800'

OCEAN CATEGORY (C-CENTPAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	19 APR 80	FRAM 2 Helo	55 lb block + MK 61	56.8/-	800/790	86.16	23.42 W	3900	Opal 2	100/90	87.24	59.65 W	2800	138	3.3	0	30	2854	1000	5	-50.3	1	63	113.5
																				10	-29.6	1	70.2	100
																				20	-24.3	1	74.8	99
																				50	-34.8	1	71	106
																				100	-67	1	67.5	134.5
																				200	-77.1	1	64.8	142.5
						86.18	23.42 W							137						5	-50.4	1	63	113.5
																				10	-30	1	70.2	100
																				20	-25	1	74.8	100
																				50	-42.2	1	71	113
																				100	-65.8	1	67.5	133.5
						86.21	23.42 W							136						5	-51.5	1	63	114.5
																				10	-30.7	1	70.2	101
																				20	-25.7	1	74.8	100.5
																				50	-39.5	1	71	110.5
																				100	-62.5	1	67.5	130

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	19 APR 80	FRAM 2 Helo	55 lb block + MK 61	56.8 +/-	800/790	86.23	23.42 W	3920	Opal 2	100/90	87.24	59.65 W	2800	135	3.4	0	30	2854	1000	5	-53.5	1	63	116.5
																				10	-29.6	1	70.2	100
																				20	-24.6	1	74.8	99.5
																				50	-34.2	1	71	105
																				100	-63.9	1	67.5	131.5
						86.25	23.42 W	4000						134						5	-50.6	1	63	113.5
																				10	-30	1	70.2	100
																				20	-25.8	1	74.8	100.5
																				50	-33.5	1	71	104.5
																				100	-65.6	1	67.5	133
																				200	-79.6	1	64.8	144.5
						86.27	23.42 W							133						5	-50.1	1	63	113
																				10	-30.1	1	70.2	100.5
																				20	-24.3	1	74.8	99
																				50	-34.6	1	71	105.5
																				100	-62	1	67.5	129.5

900

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF -- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	20 APR 80	TT3 Station 1	55 lb Block + M 61	56.8 –	800/790	80.95	6.13W	3000	Opal 2	100/90	87.24	59.65 W	2800	464	3.2	10	0	2565	800	5	-59.8	1	63	123
																				10	-38.7	1	70.2	109
																				20	-43.2	1	74.8	118
F		TT3				80.9	0.82	3300						486	3.0	2	2	2454	900	5	-64.8	1	63	128
																				10	-40.3	1	70.2	110.5
																				20	-42.2	1	74.8	117
																				50	-65.1	1	71	136
																				5	-63.6	1	63	126.5
																				10	-42.9	1	70.2	113
																				20	-44.1	1	74.8	119
																				50	-67.2	1	71	138
		TT3 Station 3				80.97	6.1E	750						497	2.7	11	5	2622	750	5	-60.3	1	63	123.5
																				10	-38.2	1	70.2	108.5
																				20	-37.6	1	74.8	112.5
																				50	-61.9	71	71	133

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF -- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
F	20 APR 80	TT3 Sta. 4	55 lb Block + MK61	56.8 / -	800 / 790	81.05	12.1E	1400	Opal 2	100 / 90	87.24	59.65 W	2800	510	2.5	4	6	2709	950	5	-72	1	63	135
																				10	-45.4	1	70.2	115.5
																				20	-39.3	1	74.8	114
																				50	-61.2	1	71	132
																				5	-63.5	1	63	126.5
																				10	-45.6	1	70.2	116
																				20	-39.3	1	74.8	114
																				50	-60.9	1	71	132
C	26 APR 79	Iceman	MK61	1.8 / -	800 / 790	88.83	180	3950	Opal 1	100 / 90	86.83	60.58 W	2100	233	2.9	0	35	2977	2100	10	-64.2	1	40.1	104.5
																				20	-57.4	1	47.2	104.5
																				50	-53.1	1	58	111
	19 APR 79																			20	-58.5	1	47.2	105.5
																				50	-56.5	1	58	114.5
	20 APR 79																			20	-62.2	1	47.2	109.5
																				50	-59.2	1	58	117
																				100	-82.9	1	52	135
																				20	-61	1	47.2	108
																				50	-58.3	1	58	116.5
	27 APR 79																			10	-68	1	40.1	108
																				20	-59.7	1	47.2	107
																				50	-53.5	1	58	111.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	19 APR 80	FRAM 2 Helo	55 lb Block + MK 61	56.8 / -	800 / 790	86.3	23.42 W	4000	Opal 2	100 / 90	87.24	59.65 W	2800	132	3.4	0	30	2854	1000	5	-52.6	1	63	115.5
																				10	-31.4	1	70.2	101.5
																				20	-24.9	1	74.8	99.5
																				50	-34.2	1	71	101.5
																				100	-63.5	1	67.5	131
																				200	-82.5	1	64.8	147.5
						86.34	23.42 W							130						5	-55.2	1	63	118.2
																				10	-31.3	1	70.2	101.5
																				20	-25.3	1	74.8	100
																				50	-35.6	1	71	103
																				100	-59.6	1	67.5	127
																				200	-81.9	1	64.8	146.5
C	26 APR 80	Camp 1	MK 61	1.8 / -	800 / 790	88.84	18.65 W	4150	Opal 2	100 / 90	87.24	59.65 W	2800	122	3.4	0	10	2732	1400	5	-61.7	1	63	94.5
																				10	-68.7	1	70.2	109
																				20	-52.5	1	74.8	99.5
																				50	-48.5	1	71	106.5
																				100	-69.9	1	67.5	122
																				200	-89.8	1	64.8	140

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF -- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	26 APR 79	FRAM 1	MK 61	1.8/-	800/790	84.47	9.49W	4000	Opal 1	100/90	86.83	60.58 W	2000	259	3.4	9	3	2660	900	5	-70.1	1	33	103
																				10	-68.5	1	40.1	108.5
																				20	-60.8	1	47.2	108
																				50	-61	1	58	119
																				100	-92.4	1	52	144.5
	20 APR 79									300/290										20	-57.2	1	47.2	104.5
																				50	-66.2	1	58	124
																				100	-88	1	52	140
	27 APR 79									100/90										10	-67.2	1	40.1	107.5
																				20	-59.5	1	47.2	106.5
																				50	-59.2	1	58	117
			55 lb Block + MK 61																	5	-51.6	1	71	122.5
																				10	-29.8	1	74.5	104.5
																				20	-29.2	1	72	101
																				50	-36.6	1	67	103.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	26 APR 79	FRAM 1	55 lb Block + MK 61	56.8 / -	800 / 790	84.47	9.49 W	4000	Opal 1	100 / 90	86.83	60.58 W	2000	259	3.4	9	3	2660	900	10	-32.7	1	70.2	103
																				20	-31.8	1	74.8	106.5
																				50	-44.8	1	71	116
	20 APR 79																			10	-36.4	1	70.2	106.5
																				20	-34.5	1	74.8	109.5
																				50	-52.8	1	71	124
										300 / 290										5	-54	1	63	117
																				10	-27.4	1	70.2	97.5
																				20	-28.7	1	74.8	103.5
																				50	-49.1	1	71	120
	19 APR 79									100 / 90										5	-50.6	1	63	113.5
																				10	-37	1	70.2	107
																				20	-33.1	1	74.8	108
																				50	-48.4	1	71	119.5
																				10	-34.5	1	70.2	104.5
																				20	-35.4	1	74.8	110
																				50	-51.7	1	71	122.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT FIELD NOMINAL/MEAS	SOURCE DEPTH (FT) PE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	21 APR 79	FRAM 1	55 lb Block + MK 61	56.8 / -	800 / 790	84.47	9.49 W	4000	Opal 1	300 / 290	86.83	60.58 W	2000	259	3.4	9	3	2660	900	5	-50.8	1	63	114
																				10	-28.2	1	70.2	98.5
																				20	-31.8	1	74.8	106.5
																				50	-56.1	1	71	127
	27 APR 79									100 / 90										10	-33.9	1	70.2	104
																				20	-31.6	1	74.8	106.5
																				50	-43.4	1	71	114.5
C	12 APR 70	ARLIS 6	MK 61	1.8 / -	800 / 788	74.13	159.6 W	800	ARLIS 5	200 / 188	73.05	152.77	3800	124	2	7	30	3407	800	10	-43.9	1	04.1	84
																				20	-36.9	1	47.2	84
																				50	-34.4	1	58	92.5
																				100	-49.2	1	52	101
										100 / 80										10	-50.7	1	40.1	91
																				20	-43.2	1	47.2	90.5
																				50	-37.7	1	58	95.5
																				100	-51.8	1	52	104
										30 / 18										20	-56.5	1	47.2	103.5
																				50	-49.5	1	58	107.5
																				100	-56.5	1	52	108.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	12 APR 70	ARLIS 6	MK 14 + MK 61	56.8 / 46.3	800 / 788	74.13	159.6 W	800	ARLIS 5	100 / 88	73.05	152.77	3800	124	2	7	30	3407	800	10	-19.7	1	69	88.5
																				20	-18.5	1	73.6	92
																				50	-23.2	1	69.8	93
																				100	-37.5	1	66.3	104
										30 / 18										10	-34	1	69	103
																				20	-34	1	73.6	107.5
																				50	-36.2	1	69.8	106
																				100	-43.5	1	66.3	110
C	14 APR 70	T3	MK 14 + MK 61	56.8 / 50	800 / 788	84.28	112.68 W	2100	ARLIS 5	200 / 188	73.05	152.77 W	3800	775	2.3	0	92	3618	2050	10	-27.1	1	69.4	96.5
																				20	-28.9	1	74	103
																				50	-52.1	1	70.2	122.5
										100 / 88										10	-34.2	1	69.4	103.5
																				20	-35.3	1	74	109.5
																				50	-53.9	1	70.2	124
										30 / 18										10	-47.5	1	69.4	117
																				20	-48	1	74	122
																				50	-67.2	1	70.2	137.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	14 APR 70	ARLIS 6	MK 61	1.8/-	800/788	74.13	159.6 W	800	ARLIS 5	200/188	73.05	152.77 W	3800	124	2	7	30	3407	800	10	-44.9	1	40.1	85
																				20	-37	1	47.2	84
																				50	-35.1	1	58	93
																				100	-52.6	1	52	104.5
	9 APR 70	ARLIS 5	MK 61	1.8/-	800/788	73.08	153.03 W	3800	ARLIS 6	200/188	74.2	159.7 W	600	129	2	7	30	3400	600	10	-45.5	1	40.1	85.5
																				20	-38	1	47.2	85
																				50	-36.5	1	58	94.5
																				100	-50.9	1	52	103
										100/88										10	-48	1	40.1	88
																				20	-43.5	1	47.2	90.5
																				50	-37.5	1	58	95.5
																				100	-50.6	1	52	102.5
										100/88										10	-50.3	1	40.1	90.5
																				20	-43.2	1	47.2	90.5
																				50	-37	1	58	95
																				100	-51.2	1	52	103

800

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF --- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	3 May 70	9.3 mi A/C Sta.	MK 14 + MK 61	56.8 / 46.3	800 / 788	-	-	3500	ARLIS 5	100 / 88	73.4	157.3 W	3500	9.3	2	0	0	3500	3500	10	-2	1	70.2	72
																				20	-4.5	1	74.8	79.5
																				50	-3	1	71	74
																				100	-12.7	1	67.5	80
																				200	-23	1	64.8	88
		20 mi A/C Sta								100 / 88				20						20	-6.5	1	74.8	81.5
																				50	-6	1	71	77
																				100	-15.9	1	67.5	83.5
																				200	-24.5	1	64.8	89.5
	20 APR 70	ARLIS 5	MK 14 + MK 61	56.8 / 46.3	800 / 788	73.17	155.52 W	3400	ARLIS 6	200 / 188	74.33	161.67	1500	130	2	15	30	2407	600	10	-10	1	70.2	80
																				20	-12	2	74.8	87
																				50	-20	2	71	91
																				100	-30.5	2	67.5	98
																				200	-42	2	64.8	107

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE EXT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF -- SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	29 APR 70	ARLIS 6	MK 14 + MK 61	56.8 46.3	800 788	74.68	163.13 W	1300	ARLIS 5	200 188	73.4	156.22 W	2000	124	2	16	0	2091	600	10	-9	1	70.2	79
																				20	-10.5	1	74.8	85.5
																				50	-20.5	1	71	91.5
																				100	-40	2	67.5	107.5
																				200	-65	2	64.8	130
										100 88										10	-18.5	2	70.2	88.5
																				20	-19	2	74.8	94
																				50	-27	2	71	98
																				100	-40.5	3	67.5	108
																				200	-65	3	64.8	130
										30 18										10	-32.5	1	70.2	102.5
																				20	-32.5	2	74.8	107.5
																				50	-37.5	2	71	108.5
																				100	-49.5	3	67.5	117
																				200	-72	3	64.8	137

AD-A156 576 LONG TERM STATISTICAL MEASUREMENTS OF ENVIRONMENTAL ACOUSTICS PARAMETERS I..(U) POLAR RESEARCH LAB INC CARPINTERIA CA B M BUCK 15 JAN 85 PRL-TR-55 2/2

UNCLASSIFIED N00014-84-C-0394 F/G 20/1 NL

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	27 APR 70	ARLIS 6	MK 14 + MK 61	56.8 / 46.3	800 / 788	74.47	162.2	1000	ARLIS 5	200 / 188	73.32	156.53 W	3200	115	2	16	0	1984	600	10	-12	2	70.2	82
																				20	-12	2	74.8	87
																				50	-19.5	2	71	90.5
																				100	-43	2	67.5	110.5
																				200	-65	2	64.8	130
										100 / 88										10	-18.5	2	70.2	89
																				20	-19	2	74.8	94
																				50	-28.5	2	71	99.5
																				100	-44.5	2	67.5	112
																				200	-67.5	2	64.8	132.5
										30 / 18										10	-33	2	70.2	103
																				20	-32	2	74.8	107
																				50	-40	2	71	111
																				100	-51.5	2	67.5	119
																				200	-73	2	64.8	138

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF ___ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	6 May 70	ARLIS 6	MK 14 + MK 61	56.8 / 46.3	800 / 788	74.63	164.17 W	400	ARLIS 5	200 / 188	73.43	156.82	3200	150	2	31	0	1705	400	10	-9	1	70.2	79
																				20	-9.5	1	74.8	84.5
																				50	-22	1	71	93
																				100	-41.5	4	67.5	109
																				200	-62	4	64.8	127
										100 / 88										10	-17	1	70.2	87
																				20	-18.5	1	74.8	93.5
																				50	-26	1	71	97
																				100	-41.5	4	67.5	109
																				200	-64.5	4	64.8	129.5
										30 / 18										10	-30	1	70.2	100
																				20	-29.5	1	74.8	104.5
																				50	-37.5	1	71	108.5
																				100	-51.5	1	67.5	119
																				200	-73.5	5	64.8	138.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	25 APR 70	T3	MK 14 + MK 61	56.8/46.3	800/788	84.27	112.58 W	2100	ARLIS 5	200/188	73.33	156.0 W	3500	780	2.3	0	90	3507	2050	10	-26	1	70.2	96
																				20	-28.5	1	74.8	103.5
																				50	-60	1	71	131
																				100	-93.5	1	67.5	161
										100/88										10	-32.5	1	70.2	102.5
																				20	-35.5	1	74.8	110.5
																				50	-60	2	71	131
																				100	-93.5	1	67.5	161
										30/18										10	-45	1	70.2	115
																				20	-48.5	1	74.8	123.5
																				50	-74.5	1	71	145.5
C	8 APR 70	ARLIS 5	MK 61	1.8/-	800/788	73.07	152.8 W	3800	ARLIS 6	200/188	74.18	159.67	800	129	2	7	30	3300	800	50	-36	3	58	94
																				100	-50.5	2	52	102.5
																				200	-78	2	50.3	128.5
										100/88										50	-36	2	58	94
																				100	-50.5	2	52	102.5
																				200	-76	2	50.3	126.5
										30/18										50	-56	1	58	114
																				100	-64.5	1	52	116.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH WITH DEPTH ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF __ SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	15 MAY 70	ARLIS 5	MK 14 + MK 61	56.8 / 46.3	800 / 788	74.18	159.57	1000	ARLIS 6	200 / 188	75.03	167.28	400	120	2	55	0	888	400	10	-25.5	2	70.2	95.5
																				20	-28.5	2	74.8	103.5
																				50	-40	3	71	111
																				100	-56	2	67.5	123.5
																				200	-72	2	64.8	137
										100 / 88										10	-30	3	70.2	100
																				20	-31.5	3	74.8	106.5
																				50	-43	3	71	114
																				100	-59.5	3	67.5	127
																				200	-76	3	64.8	141
C	19 MAY 70	ARLIS 5	MK 14 + MK 61	56.8 / 46.3	800 / 788	74.28	161.58	650	ARLIS 6	200 / 188	75.30	168.08 W	400	135	2	65	0	796	200	10	-33	8	70.2	103
																				20	-33.5	8	74.8	108.5
																				50	-46.5	8	71	117.5
																				100	-60.5	8	67.5	128
																				200	-77	8	64.8	142
										100 / 88										10	-41	8	70.2	111
																				20	-39.5	8	74.8	114.5
																				50	-52	8	71	123
																				100	-71.5	8	67.5	139
																				200	-89	8	64.8	154

800

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	8 APR 70	T3	MK 14 + MK 61	56.8 / 46.3	800 / 788	84.28	112.68	2100	ARLIS 5	200 / 188	73.07	152.8 W	3800	775	2.3	0	95	3618	2050	10	-24	1	70.2	94
																				20	-28.5	1	74.8	103.5
																				50	-58	1	71	129
																				100	-91.5	1	67.5	159
										100 / 88										10	-32	1	70.2	102
																				20	-35.5	1	74.8	110.5
																				50	-60	1	71	131
																				100	-91.5	1	67.5	159
										30 / 18										10	-45	1	70.2	115
																				20	-47.5	1	74.8	122.5
																				50	-72.5	1	71	143.5
C	9 MAY 70	T3	MK 14 + MK 61	56.8 / 46.3	800 / 788	84.12	112.67 W	2000	ARLIS 5	200 / 188	73.65	159.25 W	2000	760	2.3	3	55	2935	850	10	-27	1	70.2	97
																				20	-32.5	1	74.8	107.5
																				50	-61	1	71	132
										100 / 88										10	-34	1	70.2	104
																				20	-39	1	74.8	114
																				50	-64.5	1	71	135.5
										30 / 18										10	-48	1	70.2	118
																				20	-52	1	74.8	127
																				50	-79	1	71	150

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	28 APR 70	T3	MK 14 + MK 61	56.8 / 46.3	800 / 788	84.3	112.5	2000	ARLIS 6	200 / 188	74.7	163.13 W	1615	748	2.4	0	55	2831	1200	10	-27	2	70.2	97
																				20	-31	2	74.8	106
																				50	-60.5	2	71	131.5
										100 / 88										10	-34	2	70.2	104
																				20	-38.5	2	74.8	113.5
																				50	-67	2	71	138
										30 / 18										10	-54.5	1	70.2	124.5
																				20	-58.7	1	74.8	133.5
																				50	-87	1	71	158
C	25 APR 70	T3	MK 14 + MK 61	56.8 / 46.3	800 / 788	84.27	112.58	2100	ARLIS 6	200 / 188	74.65	162.2 W	1700	740	2.4	1	55	2798	1000	10	-27	1	70.2	97
																				20	-29.5	1	74.8	104.5
																				50	-57	1	71	128
										100 / 88										10	-35	1	70.2	105
																				20	-37.5	1	74.8	112.5
																				50	-62	1	71	133
C	9 MAY 70	T3	MK 14 + MK 61	56.8 / 46.3	800 / 788	84.12	112.67 W	2000	ARLIS 6	200 / 188	74.68	165.33 W	500	755	2.4	4.5	55	2632	500	10	-25	1	70.2	95
																				20	-29	1	74.8	104
																				50	-59.5	1	71	130.5

800'

OCEAN CATEGORY (C-CENTRAL, F-FRONT)	DATE/YEAR	SOURCE STATION NAME	SOURCE TYPE	SOURCE TNT YIELD NOMINAL/MEAS	SOURCE DEPTH (FT) RE SURF/RE ICE BOTTOM	SOURCE LATITUDE	SOURCE LONGITUDE	WATER DEPTH AT SOURCE (m)	RECEIVER STATION NAME	RECEIVER DEPTH (FT) RE SURF/RE ICE BOTTOM	RCVR LATITUDE	RCVR LONGITUDE	WATER DEPTH AT RCVR (m)	RANGE (N.MI.)	ROUGHNESS (SIGMA ICE BOTTOM) (m)	% OF PATH WITH DEPTH LESS THAN 1000 m	% OF PATH OVER ABYSSAL PLAIN	MEAN PATH DEPTH (m)	MINIMUM PATH DEPTH (m)	RECEIVED SIGNAL FREQUENCY (HZ)	SIGNAL IN 1 HZ BAND	SIGNAL IS AVG OF — SHOTS	SOURCE LEVEL (1 YARD)	TL (1 YD)
C	22 APR 70	ARLIS 6	MK 14 + MK 61	56.8 / 46.3	800 / 788	74.65	164.08 W	1000	ARLIS 5	200 / 188	73.22	156.18	2550	160	2	15	0	1831	600	10	-12	1	70.2	82
																				20	-12	1	74.8	87
																				50	-25.5	1	71	96.5
																				100	-43	1	67.5	110.5
																				200	-65	1	64.8	130
										100 / 88										10	-18.5	1	70.2	88.5
																				20	-19	1	74.8	94
																				50	-28.5	1	71	99.5
																				100	-44.5	1	67.5	112
																				200	-67.5	1	64.8	132.5
										30 / 18										10	-33	1	70.2	103
																				20	-32.5	1	74.8	107.5
																				50	-40	1	71	111
																				100	-51.5	1	67.5	119
																				200	-74	1	64.8	139

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