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DATA REPORT OF OBLIQUE REFLECTION-REFRACTION RADIO-
SONOBUOY PROFILES ON THE AFRICAN ATLANTIC CONTINENTAL MARGIN
(R/V ATLANTIS II CRUISES 67 AND 75)

By

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Woods Hole, Massachusetts 02543

June 1974

TECHNICAL REPORT

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Margin program.*

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11 June 1974

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ABSTRACT: Two hundred sixty-four unreversed oblique reflection-refraction profiles using expendable radio-sonobuoys were obtained during two geophysical cruises to the Atlantic continental margin of Africa. This data report gives the profile locations, a summary of the data collection and analysis, and 780 interval reflection and refraction velocities and thicknesses that were determined.

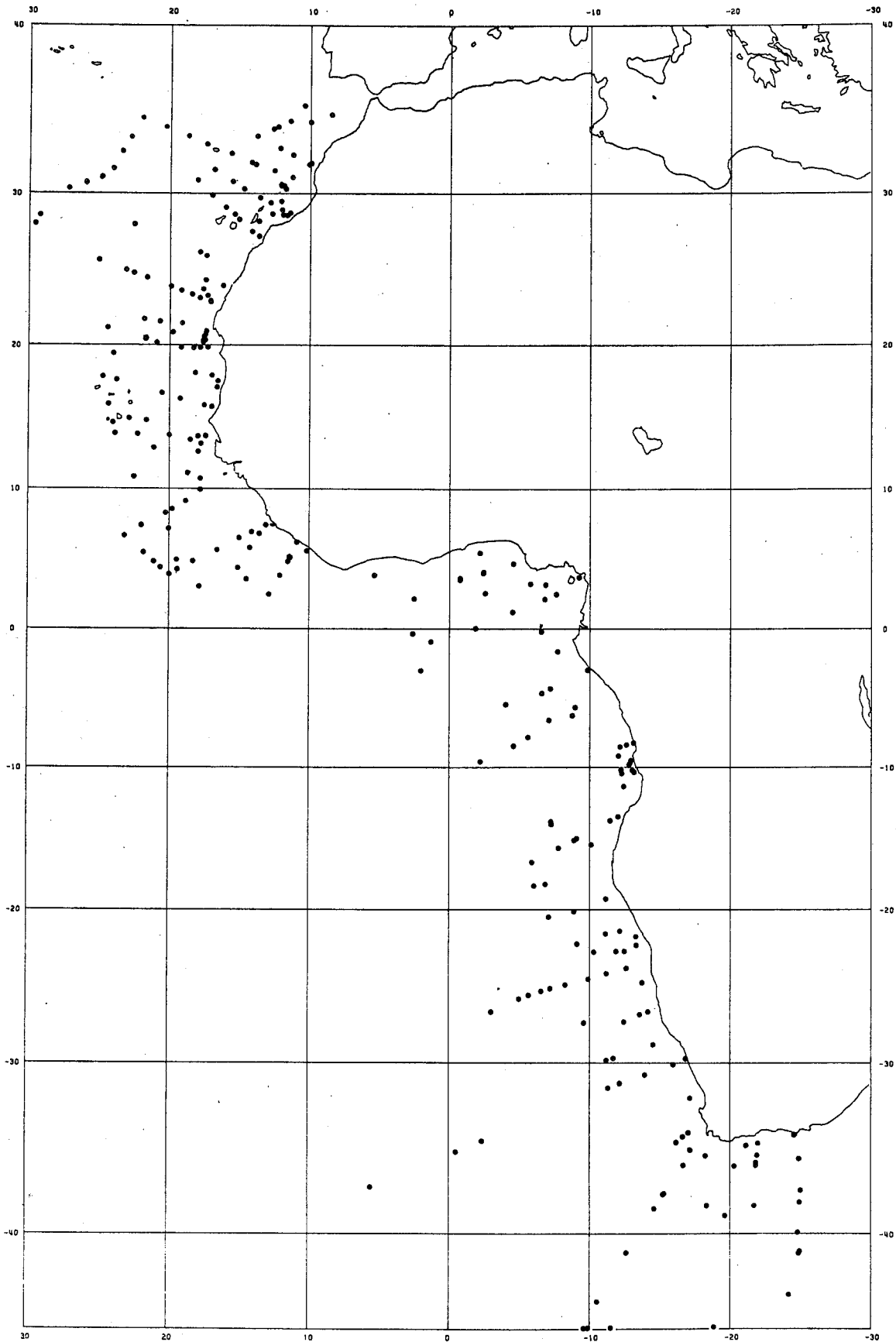


Figure 1. Geographic distribution of oblique reflection-refraction sonobuoy profile stations, R/V ATLANTIS II Cruises 67 & 75.

INTRODUCTION

Two hundred sixty-four oblique reflection-refraction profiles using expendable radio-sonobuoys were taken during the Eastern Atlantic Continental Margin program sponsored by the International Decade of Ocean Exploration (Fig. 1). The program covering 95,800 line kilometers, was carried out during cruises 67 (1972) and 75 (1973) of R/V ATLANTIS II of the Woods Hole Oceanographic Institution. About a third of the sonobuoy profiles were processed at sea.

The sonobuoys, modified military type AN/SSQ-41, were purchased from Oceanology International of College Station, Texas. Each broadcasted at one of 16 frequency allocations in the 162 MHz band and had a hydrophone suspended on a compliant cable at either 19 meters (60 feet) or 91 meters (300 feet) below the buoy. In nearly all deployments the 19-meter depth was used to keep the hydrophone within the wave-mixed, uniform temperature, surface layer enabling better detection of the direct water wave arrival.

The ship steamed away from the buoys at 7 to 9 km/hour and the source repetition rate was between 10 and 13 seconds -- 20 to 30 m travel between shots. The slow ship speed was chosen to keep the travel time step-out of the reflected wavetrains between successive shots small enough to maintain good visual coherence on the recording.

The sources were a 2.0 liter (120 cu. in.) and/or a 4.9 liter (300 cu. in.) Bolt PAR airgun operated at a pressure of about 1.2×10^7 N/m² (1700 psi). The reflected and refracted returns were displayed on a graphic recording using a 7.5 or 8.0 second sweep commencing shortly before the onset of the sea-floor reflection. The useful range of the reflection traces was generally limited to three times the normal-incidence travel time because of the convergence of the returns and the decrease in intensity of the returns from buried horizons. Radio range of the buoy was about 20 seconds water wave travel time (30 km).

The data were concurrently recorded on a 4-track Tandberg Series 100 FM tape recorder. The channel allocations were:

- 1) normal incidence reflection profile detected with the towed streamer, 2) tape speed compensation signal, 3) oblique reflection-refraction return detected by the sonobuoy, and 4) voice announcements and shot instant. At 1 7/8 inches per second recording speed the bandpass is 0.1-313 Hz.

A bandpass filter of 15 to 35 Hz provided the most discernible display of the reflection data. The direct water wave arrival was often difficult to follow at range. Thus, determination of the travel time from the ship-towed source to the sonobuoy hydrophone was the poorest part of the measurement. At times, a replay of the tape at a higher filter bandpass was effective in better detection of the direct water wave travel time.

PROCEDURE

Terrains of flat or uniformly sloping horizons are best suited for oblique reflection-refraction profile determinations because the computation used is based on rectilinear propagation of rays through layers of constant velocity separated by planar interfaces. In a majority of launchings, we were successful in anticipating a favorable attitude of the reflecting horizons over which the ship subsequently passed. Compressional wave velocities were only determined where the reflecting interfaces had a lateral extent of a few kilometers and a slope of less than 5 degrees as measured on the normal-incidence profile.

The velocity determination is very sensitive to accurate travel time measurements. Our practice was to trace the most continuous cycle rather than the leading edge of the reflection wavelet. The minimum increment in normal-incidence travel time between layers was chosen to be at least 0.2 seconds because of: 1) the duration of the airgun pulse (0.2 sec.), and 2) the deviations of the picks from the best fitted line having to be smaller than the thickness of the layer.

A data sheet (Fig. 2) detailing pertinent information about each sonobuoy was prepared. Since the determination of range to the buoy from the ship-towed source could vary as much as 5%, redundancy was sought by comparing two or more measurements of the shallow water temperature and the ship's speed. Because all

Cruise _____ SB# _____ Type _____ Chn. _____

Date _____ Time _____ Buoy hydrophone depth: 60 ft; 300 ft; _____
Local/GMT

Location and Recording
Tape # _____ Cue # _____ Recorder _____ Tape Speed _____ ips

Seismic Source _____ Repetition period of source _____ sec.
and size

Position at launch: Lat. _____ Long. _____ (raw or finalized)
Physiographic locale _____

Sea state _____ Traffic _____

Course _____ Speed _____ knots (Navigational) _____ (EM Log, shaft rpm)
_____ knots (Direct arrival)

Vert Tr and Velocity
Water depth (E/S Recording) _____ fm (800 fm/sec)

Normal-incidence two-way travel time (from E/S) (1) _____ sec
(2) _____ sec (typically minus .006 sec)
(3) _____ sec (either minus .012 sec = 60 ft.
or minus .060 sec = 300 ft.)

Normal incidence travel time for sonobuoy _____ sec (sum of (1) and (3) above)

Water depth _____ km (uncorrected, 1500 m/sec, from (1) above)

Matthews' Table area _____

Average vertical velocity (Matthews, Table I) (\bar{V}_v) _____ km/sec

Horizontal Velocity
Surface Temperature _____ °C
Source: BT _____ Bucket _____ (Best sources)
Other: H.O.225; Engine Room intake; STD; _____

Estimated Surface Layer Velocity V_s _____ km/sec
(from average water temperature for 5-19 meter depth), Matthews Tables 3 & 5.

Slopes
Seafloor slope _____
Down (-) or up (+) from buoy

Buried horizon slopes - estimates _____
(corrected for est. velocity of overburden)

Down (-) or up (+) from buoy

Scaling
Check individual recordings!

Recording sweep periods (resolution):
_____ sec _____ inches/sec

Comments:

Figure 2. Sample Data Sheet

of the profiles are unreversed, the slopes of the horizons were estimated from the concurrent normal-incidence recording. The slopes were corrected for the vertical exaggeration of the recording due to ship's speed, recorder sweep period and advance, and source repetition rate (Fig. 3), and for the compressional wave velocity of the overburden (Fig. 4).

Those reflecting horizons that were prominent and extensive on the concurrent normal-incidence recording were selected, where possible, on the sonobuoy profiles. These reflection sequences and refractions arrivals were traced on a transparent overlay with a muted grid of 10 divisions to the inch. The useable range of the reflection trace is limited by the significant deviation that occurs in water from straight-line propagation of rays at angles greater than 45° from the normal at the sea surface. The direct, reflection, and refraction arrivals were read at equal travel time intervals. A range-travel time plot based on the information from the data sheet and the digitized data was made using program PORP (Plot Oblique Reflection Profiles) (Fig. 5). Edits were made where necessary. The best line was fitted to the squares of the ranges and travel times for the reflections, and to the ranges and travel times for the refractions using program LINFT (LINEar FiT) (Fig. 6). The tracing and the accuracy of the digitization was checked by the deviations from the best fitting lines. Then the reflection data were processed by

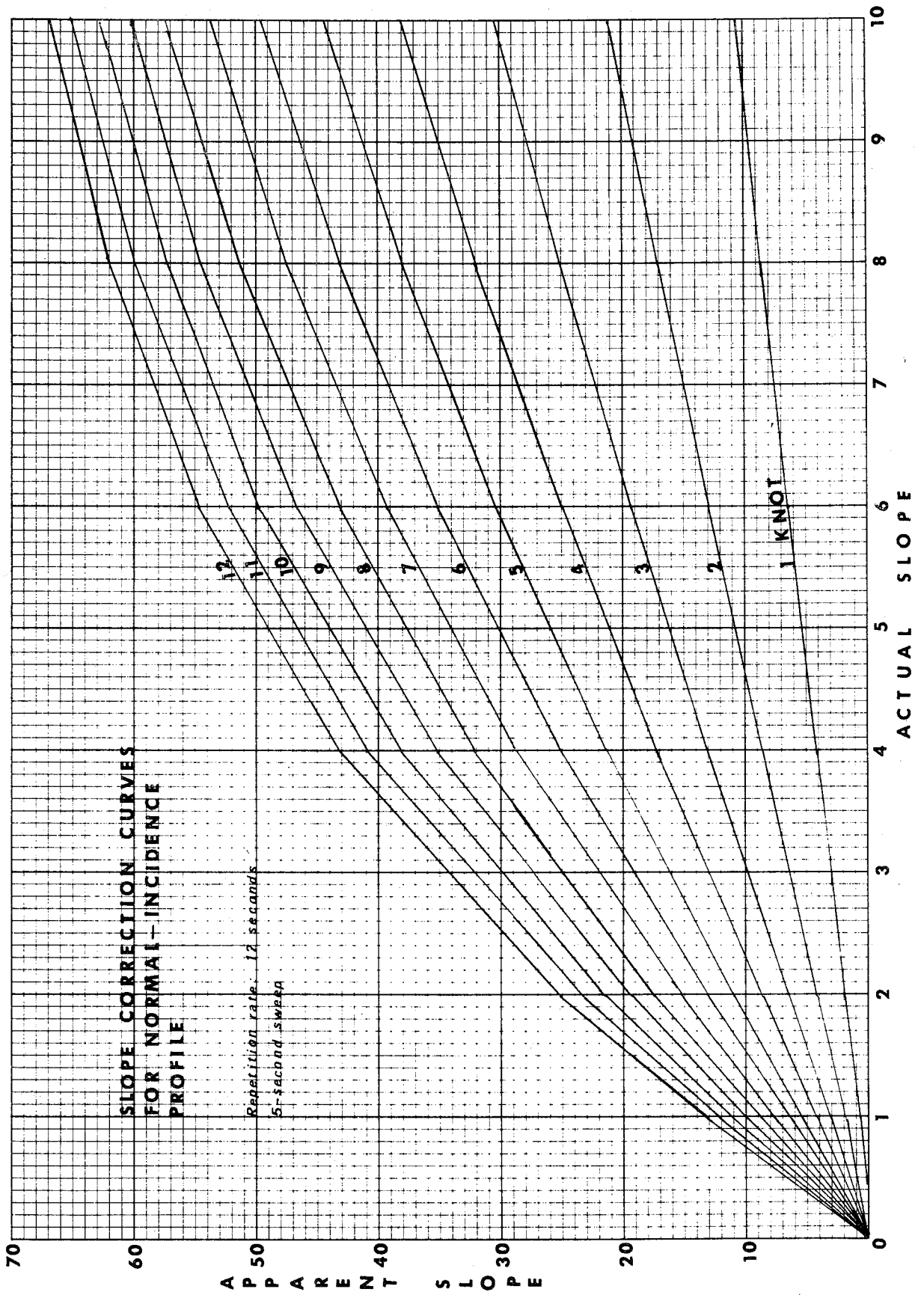


Figure 3. Sample slope correction curves for normal-incidence profile on SDA7003 10-inch graphic recorder.

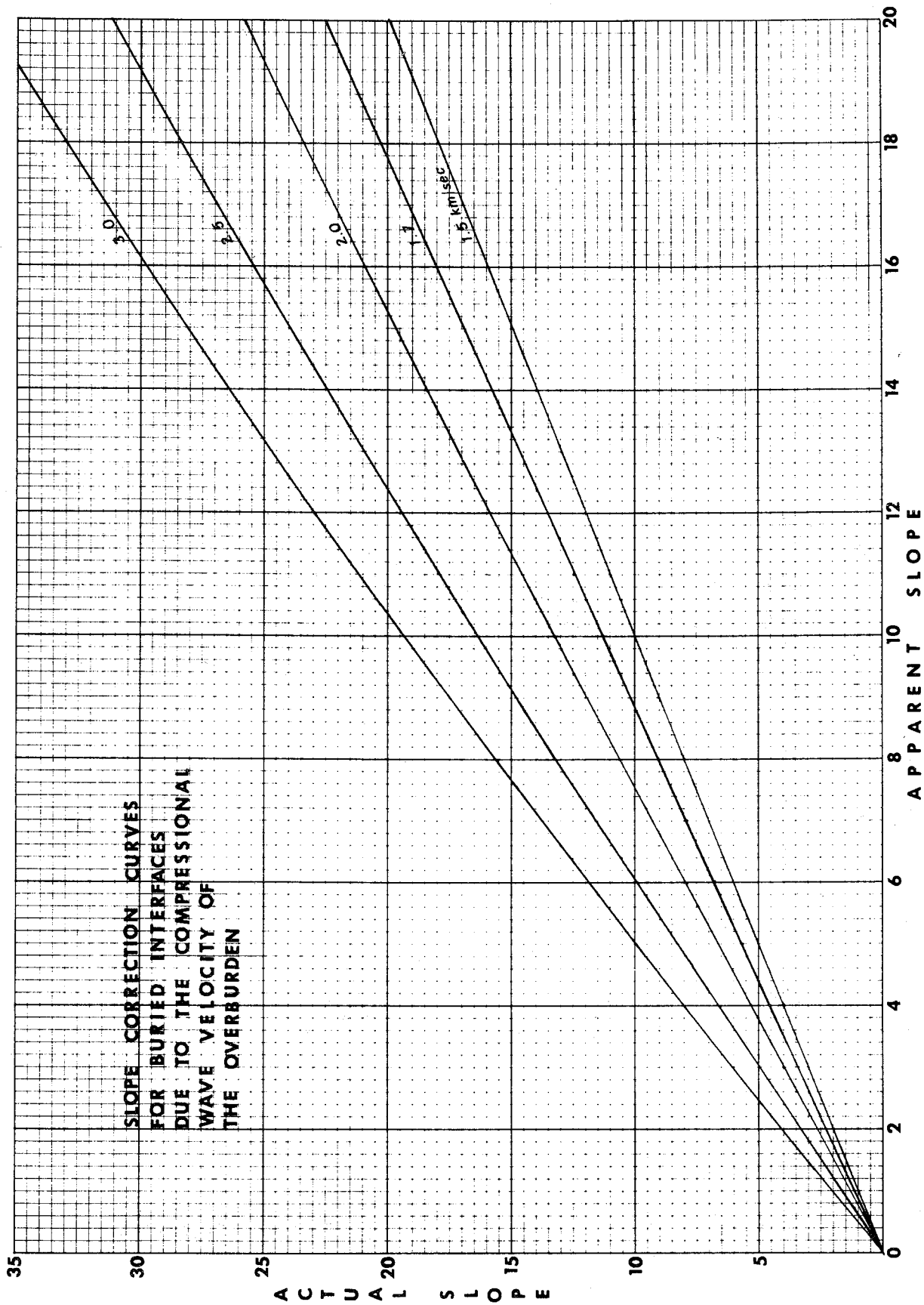


Figure 4. Slope correction curves for buried interfaces due to the compressional wave velocity of the overburden.

31 MAY 1974 1210R
ALL-75 LEG 6 LINE 123 SB#218 4 JUNE '73 1145-1345Z
24 31.7'N 021 37.9'W C/292 S/4.8
DATE: -0.013 E/S DEPTH: 4.576 S.055 SEC.

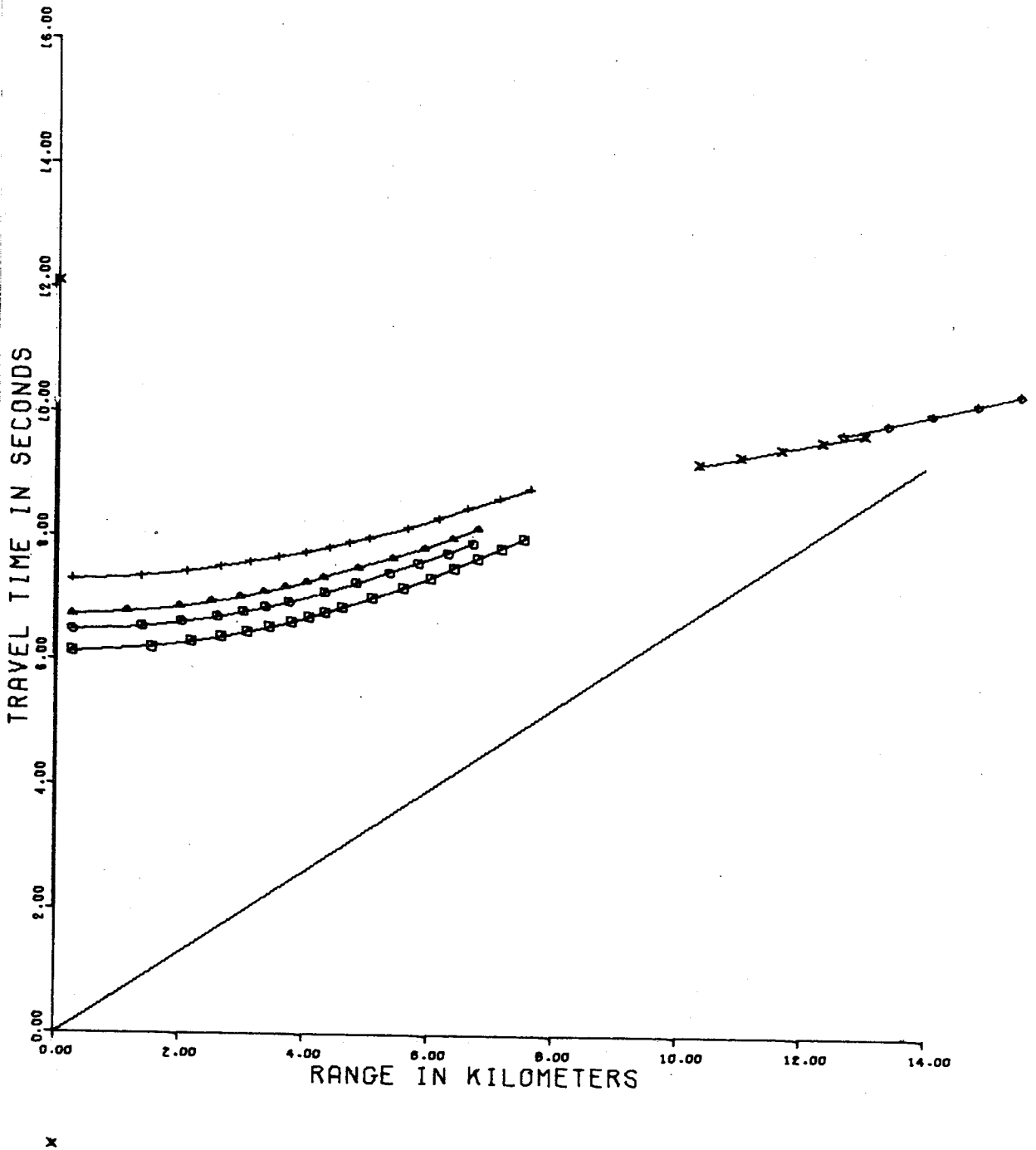


Figure 5. Sample range-travel time plot of the digitized data using Program PORP.

```

PROG LINEAR FIT
      7 JAN 73

E TODAY MONTH YEAR TIME
31 MAY 1974 1235R
E LABEL
#11-75 LEG6 LINE123 SB218 #JUL3 1145-1345Z 24 31.7'N #21 37.0'W
MEAN VERT SOUND VEL: 149119 HORIZONTAL SOUND VEL: 1.5248
INCH/SEC: 1.2388 TIME ZERO CORR: 1.000
E NUMBER OF POINTS EACH LAYER
17 13 14 15
E INCREMENTAL LAYER SLOPES
-.19 .88 .88 -1.88
E SENSE SWITCH OPTIONS AND LOAD DATA TAPE

```

LAYER	CDATA	TDATA	KM	SEC	DVAL	TV/L	RES	ANG	INC
LAYER 1	1.000	7.513	.284	6.147	.881	37.785	.3	63	
	1.150	7.600	1.689	6.228	2.598	38.685	.176	8.8	
	1.660	7.700	2.253	6.308	5.876	39.696	.899	12.7	
	2.060	7.800	2.758	6.381	7.606	40.728	.816	15.6	
	2.390	7.900	3.174	6.442	10.076	41.758	-.828	18.8	
	2.690	8.000	3.553	6.543	12.623	42.888	-.803	20.8	
	2.980	8.100	3.919	6.624	15.358	43.872	-.227	21.9	
	3.260	8.200	4.197	6.784	17.612	44.948	-.137	21.5	
	3.480	8.300	4.482	6.785	19.987	46.038	-.852	21.8	
	3.640	8.400	4.752	6.856	22.581	47.141	-.128	24.5	
	4.030	8.600	5.244	7.027	27.582	49.385	-.838	29.8	
	4.440	8.800	5.762	7.189	33.197	51.682	-.227	31.2	
	4.880	9.000	6.216	7.351	38.648	54.431	-.261	33.3	
	5.180	9.200	6.595	7.512	43.498	56.432	.816	35.1	
	5.420	9.400	6.999	7.644	48.988	58.885	.866	36.8	
	5.720	9.600	7.377	7.835	54.424	61.391	.148	38.3	
	6.020	9.800	7.756	7.997	60.154	63.848	.237	39.8	
	A= 4.978	E= 37.374	VLAVE(1)= 1.511	ORTIM(1)= 6.113	DEPTH(1)= 4.628				
LAYER 2	1.000	7.931	.285	6.486	.881	42.872	.137		
	1.020	8.000	1.446	6.543	2.891	42.888	.872		
	1.030	8.100	2.090	6.624	4.367	43.872	.877		
	2.000	8.200	2.683	6.784	7.198	44.948	-.875		
	2.050	8.300	3.125	6.785	9.764	46.038	-.899		
	2.080	8.400	3.491	6.806	12.185	47.141	-.877		
	2.040	8.500	3.869	6.907	14.972	48.256	-.141		
	3.410	8.700	4.463	7.148	19.915	48.27	-.816		
	3.810	8.900	4.993	7.288	24.927	49.385	.131		
	4.260	9.100	5.535	7.431	30.641	50.432	.876		
	4.610	9.300	6.115	7.593	36.181	51.682	.849		
	5.020	9.500	6.495	7.754	42.181	52.885	-.876		
	5.310	9.700	6.911	7.916	47.764	54.432	.832		
	A= 4.948	E= 41.896	VLAVE(2)= 1.518	ORTIM(2)= 6.473	DEPTH(2)= 4.913				
LAYER 3	1.000	8.241	.286	6.737	.882	45.383	-.824		
	.820	8.300	1.195	6.785	1.428	46.038	.851		
	1.570	8.400	2.066	6.846	4.208	47.141	-.878		
	1.930	8.500	2.596	6.947	6.739	48.256	-.819		
	2.010	8.600	3.076	7.027	9.459	49.385	-.863		
	2.060	8.700	3.467	7.148	12.181	49.385	-.825		
	2.980	8.800	3.828	7.289	14.594	51.682	.828		
	3.120	8.900	4.178	7.428	17.448	52.885	-.838		
	3.440	9.000	4.451	7.551	19.844	54.432	.119		
	3.850	9.200	5.119	7.712	25.193	56.432	.822		
	4.010	9.400	5.688	7.844	31.398	58.885	-.843		
	4.720	9.600	6.117	7.835	37.421	61.391	-.111		
	5.090	9.800	6.584	7.997	43.353	63.848	-.118		
	5.420	10.000	7.081	8.158	49.811	66.558	.861		
	A= 4.918	E= 45.371	VLAVE(3)= 1.523	ORTIM(3)= 6.756	DEPTH(3)= 5.138				
LAYER 4	1.000	8.941	.482	7.342	.232	53.321	.109		
	1.020	9.000	1.618	7.351	2.616	54.431	-.848		
	1.040	9.100	2.375	7.441	5.643	55.425	.814		
	2.040	9.200	2.938	7.512	8.586	56.432	.111		
	2.030	9.300	3.422	7.593	11.713	57.652	.182		
	2.810	9.400	3.982	7.644	15.226	58.885	.861		
	3.170	9.500	4.456	7.754	18.978	60.131	-.108		
	3.480	9.600	4.748	7.835	22.543	61.391	-.102		
	3.740	9.700	5.176	7.916	25.784	62.463	-.135		
	4.040	9.800	5.488	7.997	29.283	63.848	-.106		
	4.380	10.000	6.135	8.158	34.422	66.558	-.197		
	4.040	10.200	6.540	8.328	42.778	69.028	.811		
	5.280	10.400	7.208	8.441	49.273	71.935	.824		
	5.780	10.600	7.558	8.643	56.996	74.811	.128		
	6.180	10.800	8.054	8.845	64.874	77.528	-.823		
	A= 3.778	E= 53.884	VLAVE(4)= 1.629	ORTIM(4)= 7.286	DEPTH(4)= 5.933				
LAYER DEPTH THICK	VELOCITY	TT	INC	REFL	TT				
1	4.628	1.0	1		6.113				
2	4.913	.293	1.629	.359	6.473				
3	5.138	.217	1.653	.263	6.736				
4	5.933	.843	2.988	.558	7.286				

```

EOJ - REFLECTIONS

E NUMBER OF POINTS EACH LAYER
5
E INCREMENTAL LAYER SLOPES
.19 .88 .88 .19
E SENSE SWITCH OPTIONS AND LOAD DATA TAPE

```

LAYER	CDATA	TDATA	KM	SEC	DVAL	TV/L	RES	ANG	INC
LAYER 1	8.240	11.301	10.602	9.208	10.602	9.088	.842		
	8.860	11.453	11.389	9.310	11.389	9.438	-.842		
	9.470	11.605	11.998	9.451	11.998	9.451	-.811		
	9.930	11.758	12.659	9.572	12.659	9.572	.811		
	10.480	11.901	13.353	9.683	13.353	9.683	-.828		
	A= 11.68	E= 7.353	VLAVE(1)= 5.697	ORTIM(1)= 7.353	DEPTH(1)= 5.784				
LAYER 2	10.200	11.901	13.888	9.603	13.888	9.693	.831		
	10.790	12.101	13.745	9.855	13.745	9.855	-.881		
	11.370	12.381	14.477	10.816	14.477	10.316	.818		
	11.960	12.581	15.221	11.178	15.221	8.78	-.872		
	12.530	12.771	15.941	11.539	15.941	8.334	.842		
	A= 12.95	E= 6.858	VLAVE(2)= 4.555	ORTIM(2)= 6.838	DEPTH(2)= 5.431				
LAYER DEPTH THICK	VELOCITY	TT	INC	REFL	TT				
1	5.431	1.0	4.555						
2	5.774	.827	5.607	.363					

```

EOJ - REFRACTIONS

```

Figure 6. Sample listing of LINFIT computations.

PROG SLOWI 16JAN74
E TODAY MONTH YEAR TIME
31 MAY 1974 1247R
E CRUISE SE DATE LOCATION
/II/5 LEG6 LINE123 SE218 4JU73 1145-1345Z 24 31.7'N 821 37.9'W
E/S WATER DEPTHS: 2420 METER VERTICAL SOUND VELOCITY: 1.5113
HORIZ SOUND VELOCITY: 1.5240 SEC/INCH= 1.2388
TIME ZERO CORR= .100 TT SHIFT= .000 FILTER= .040
E NUMBER OF DATA POINTS FOR EACH LAYER
17 13 14 15

E INCREMENTAL SLOPES OF LAYERS
-.19 .00 .00 -1.00

Table with 4 columns: DIR (IN), REF (IN), DIR (SEC), REF (SEC). It lists directional data for various layers.

Table with 4 columns: DSQ(KM), R2(SEC), R2 COMPUTED DIFFERENCE. It lists distance and time difference data for various layers.

STANDARD DEVIATION: .181 NEGATIVE C VALUES DISCARDED 0 / 17
COEFFICIENTS OF FITTED POLYNOMIAL: INTERCEPT=37.3774 X2= 1.0694
X3= .2851 X4= -.0117 X5= -.0002
VH CORRECTED= 1.5629 VH SUPPLIED= 1.5240
LAYER 1 VELOCITY= 1.511 REFLECTION TIME= 6.148 THICKNESS= 4.6 6
DEPTH= 4.646 SV= .005 SLOPE= -.19
NORMAL INCIDENCE TT CORRECTION= -.065

Table with 4 columns: DIR (IN), REF (IN), DIR (SEC), REF (SEC). It lists directional data for various layers.

Table with 4 columns: DSQ(KM), R2(SEC), R2 COMPUTED DIFFERENCE. It lists distance and time difference data for various layers.

STANDARD DEVIATION: .182 NEGATIVE C VALUES DISCARDED 0 / 17
COEFFICIENTS OF FITTED POLYNOMIAL: INTERCEPT=36.5768 X2= 1.0595
X3= .2851 X4= -.0117 X5= -.0002
VH CORRECTED= 1.5556 VH SUPPLIED= 1.5240
LAYER 1 VELOCITY= 1.511 REFLECTION TIME= 6.083 THICKNESS= 4.597
DEPTH= 9.240 SV= .005 SLOPE= -.19
DIRECT WATER WAVE VELOCITY CORRECTION 1.0207

Table with 4 columns: DIR (IN), REF (IN), DIR (SEC), REF (SEC). It lists directional data for various layers.

Table with 4 columns: DSQ(KM), R2(SEC), R2 COMPUTED DIFFERENCE. It lists distance and time difference data for various layers.

STANDARD DEVIATION: .084 NEGATIVE C VALUES DISCARDED 1 / 12
COEFFICIENTS OF FITTED POLYNOMIAL: INTERCEPT= .0092 X2= .3548
X3= .0951 X4= .0052 X5= -.0010

Table with 4 columns: DIR (IN), REF (IN), DIR (SEC), REF (SEC). It lists directional data for various layers.

Table with 4 columns: DSQ(KM), R2(SEC), R2 COMPUTED DIFFERENCE. It lists distance and time difference data for various layers.

STANDARD DEVIATION: .084 NEGATIVE C VALUES DISCARDED 0 / 17
COEFFICIENTS OF FITTED POLYNOMIAL: INTERCEPT=37.3774 X2= 1.0694
X3= .2851 X4= -.0117 X5= -.0002
VH CORRECTED= 1.5629 VH SUPPLIED= 1.5240
LAYER 1 VELOCITY= 1.511 REFLECTION TIME= 6.148 THICKNESS= 4.6 6
DEPTH= 4.646 SV= .005 SLOPE= -.19
NORMAL INCIDENCE TT CORRECTION= -.065

Table with 4 columns: DIR (IN), REF (IN), DIR (SEC), REF (SEC). It lists directional data for various layers.

Table with 4 columns: DSQ(KM), R2(SEC), R2 COMPUTED DIFFERENCE. It lists distance and time difference data for various layers.

STANDARD DEVIATION: .084 NEGATIVE C VALUES DISCARDED 0 / 17
COEFFICIENTS OF FITTED POLYNOMIAL: INTERCEPT=36.5768 X2= 1.0595
X3= .2851 X4= -.0117 X5= -.0002
VH CORRECTED= 1.5556 VH SUPPLIED= 1.5240
LAYER 1 VELOCITY= 1.511 REFLECTION TIME= 6.083 THICKNESS= 4.597
DEPTH= 9.240 SV= .005 SLOPE= -.19
DIRECT WATER WAVE VELOCITY CORRECTION 1.0207

Table with 4 columns: DIR (IN), REF (IN), DIR (SEC), REF (SEC). It lists directional data for various layers.

Table with 4 columns: DSQ(KM), R2(SEC), R2 COMPUTED DIFFERENCE. It lists distance and time difference data for various layers.

31 MAY 1974 1247R
/II/5 LEG6 LINE123 SE218 4JU73 1145-1345Z 24 31.7'N 821 37.9'W
VELOCITY REFL TIME THICKNESS DELTA TT DEVIATION SLOPE

Small table with 4 columns: DIR (IN), REF (IN), DIR (SEC), REF (SEC). It lists directional data for various layers.

Figure 7. Sample listing of SLOWI computations

program SLOWI (SLOping WIDe angle reflection profiles) (Fig. 7) (Le Pichon, et al., 1968, Houtz, et al., 1968) which: 1) adjusts the direct water wave arrival times to match one predicted from the seafloor reflection based on the normal-incidence travel time, the seafloor slope, and good estimates of horizontal and mean vertical sound velocities, 2) fits the oblique reflection trace with a fourth-order polynomial which when differentiated determines the emergent angle of the wavefront at the sea surface as a function of range, 3) computes the reduced ranges and travel times for each layer knowing the emergent angle, the normal-incidence travel time for the water and successive layers, and the slopes of the horizons, and 4) fits a straight line to the squares of the reduced ranges and travel times for each layer to determine the velocity and thickness.

Where possible, each refraction was matched to its corresponding oblique reflection. A simple modeling program which computes and plots expected travel times versus ranges helped verify some of the interpretations.

Four examples of the sonobuoy profiles obtained from different physiographic areas are shown in Figs. 8, 9, 10, and 11. Each figure shows the sonobuoy profile, its tracing, and the concurrent normal incidence reflection profile with its interpretation. The symbols used in the figures are: D, the direct water wave arrival, and V, the computed velocity.

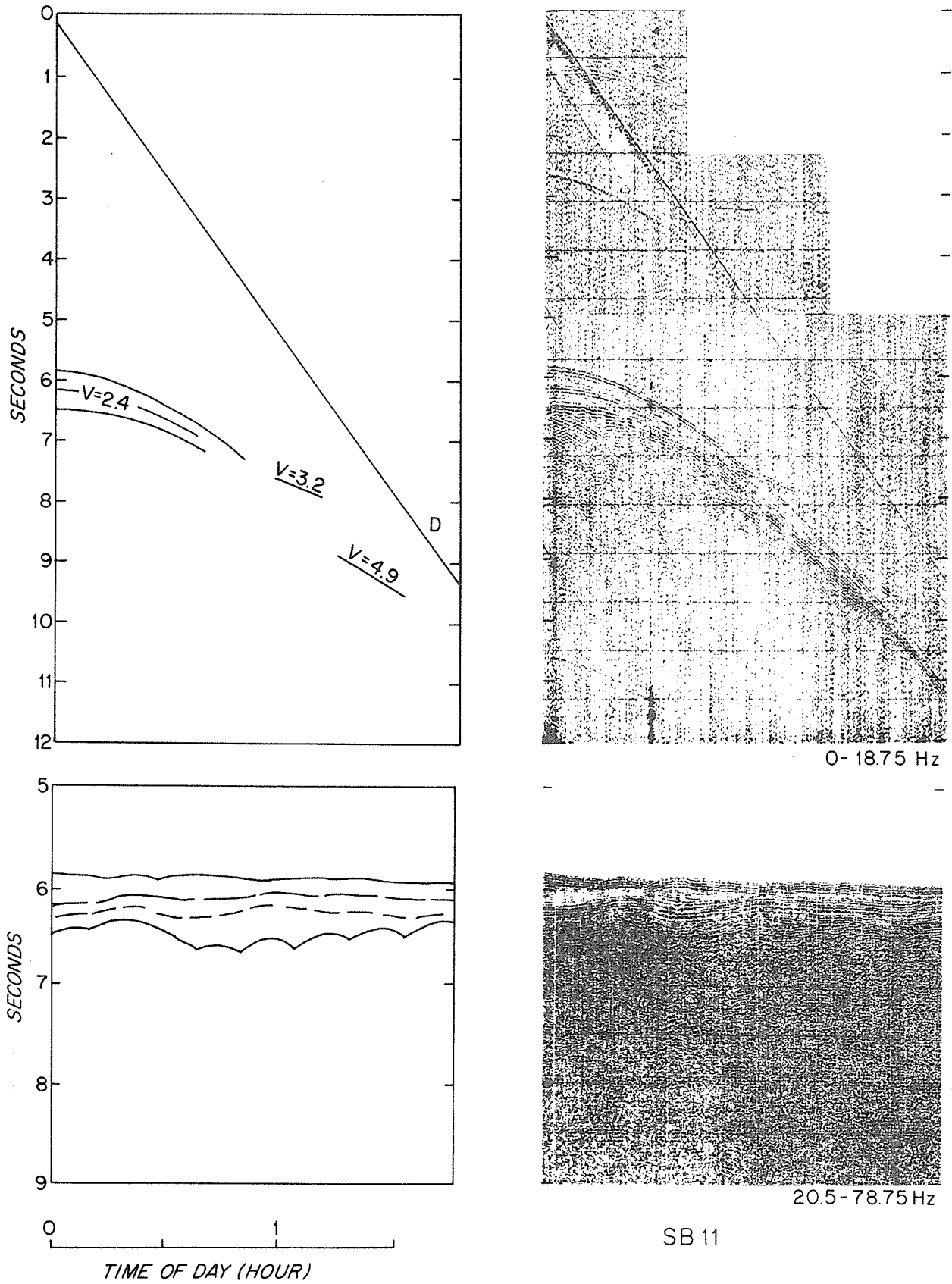


Figure 8. Sonobuoy and concurrent normal-incidence profile obtained from the southwest Agulhas Basin, north of the Atlantic - Indian Ridge. This profile shows a thin sediment layer over shallow oceanic basement. The velocity in the sediments was computed using the oblique reflections. Deeper velocities were determined from the refractions.

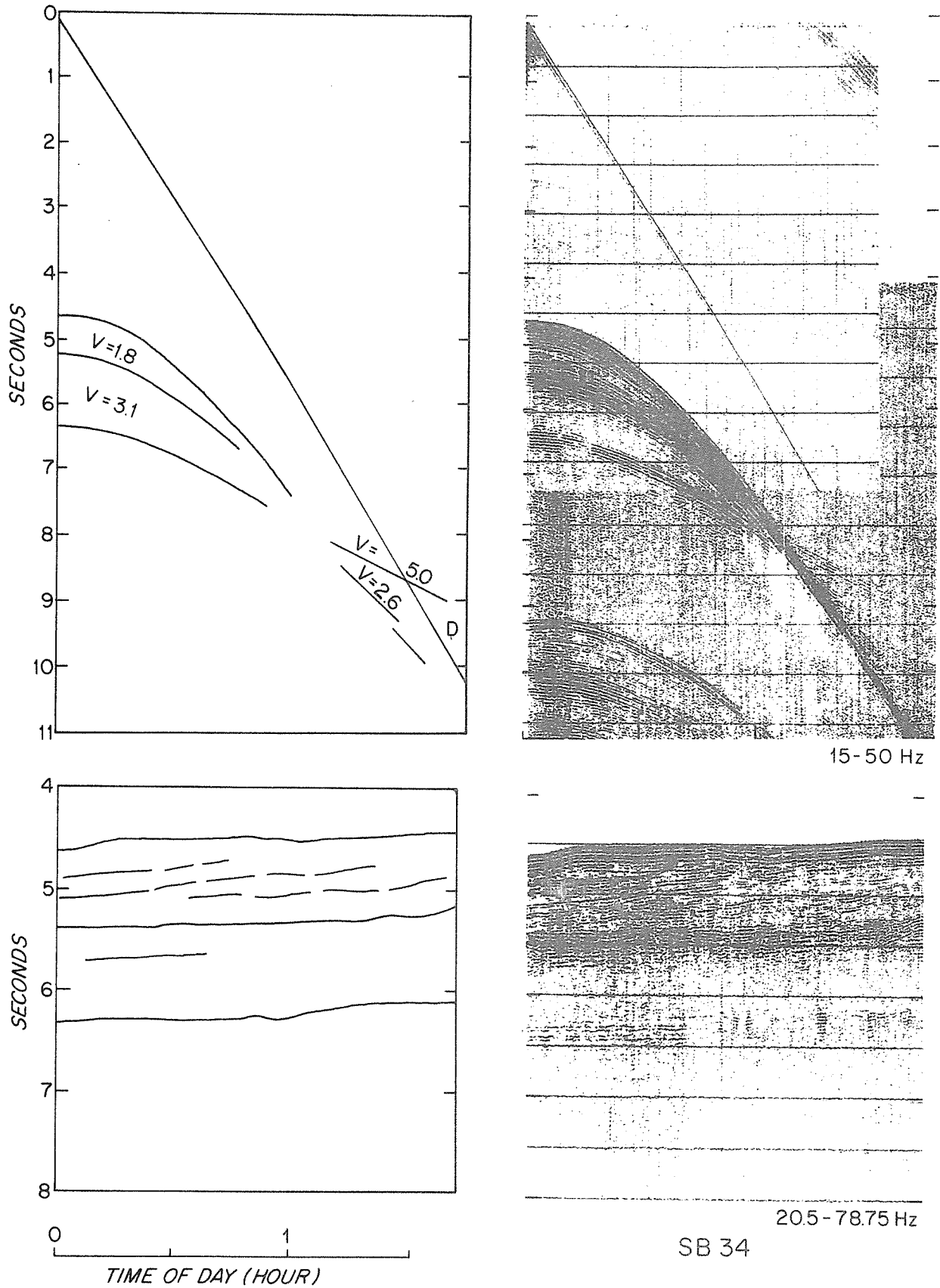
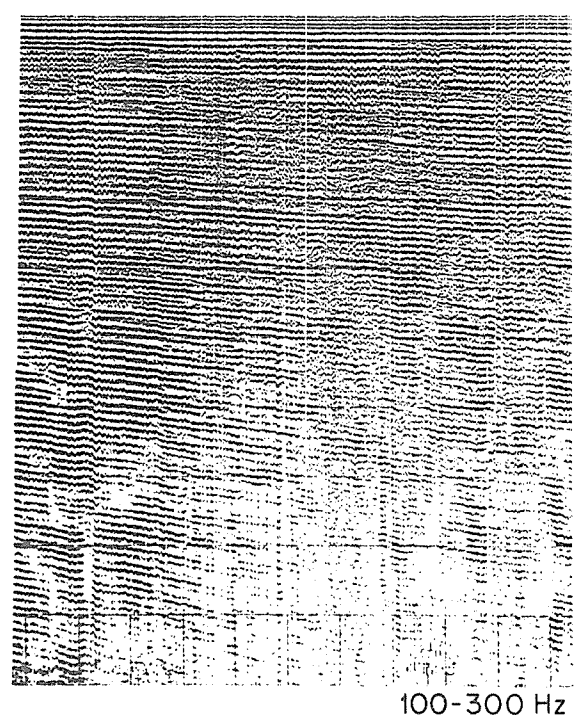
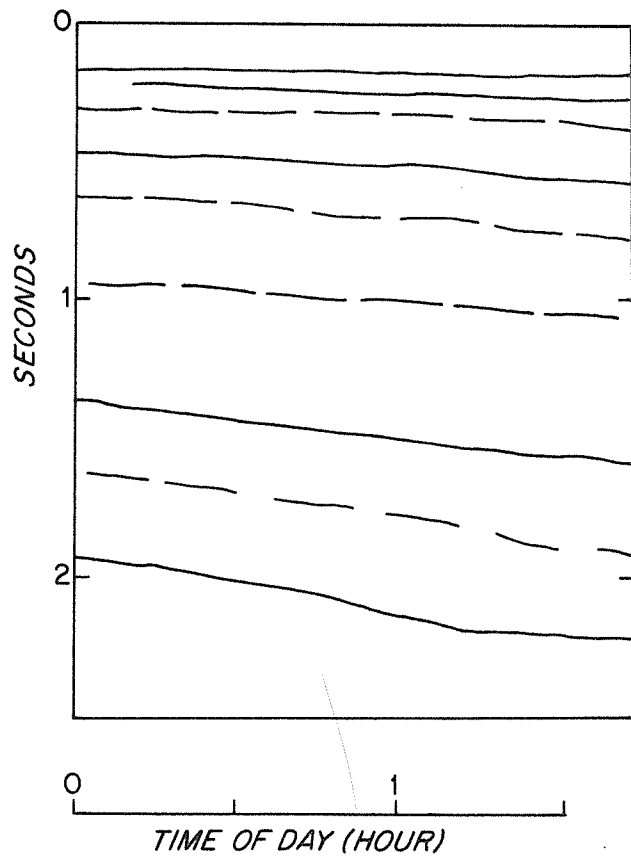
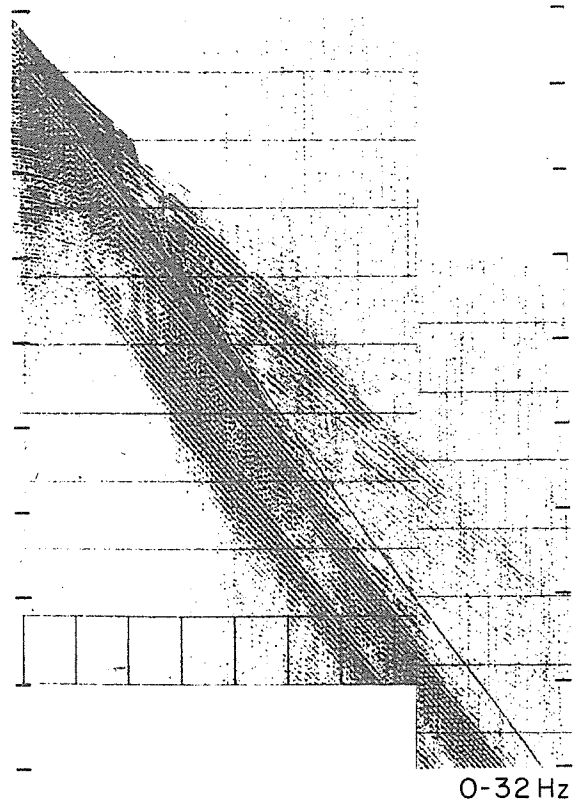
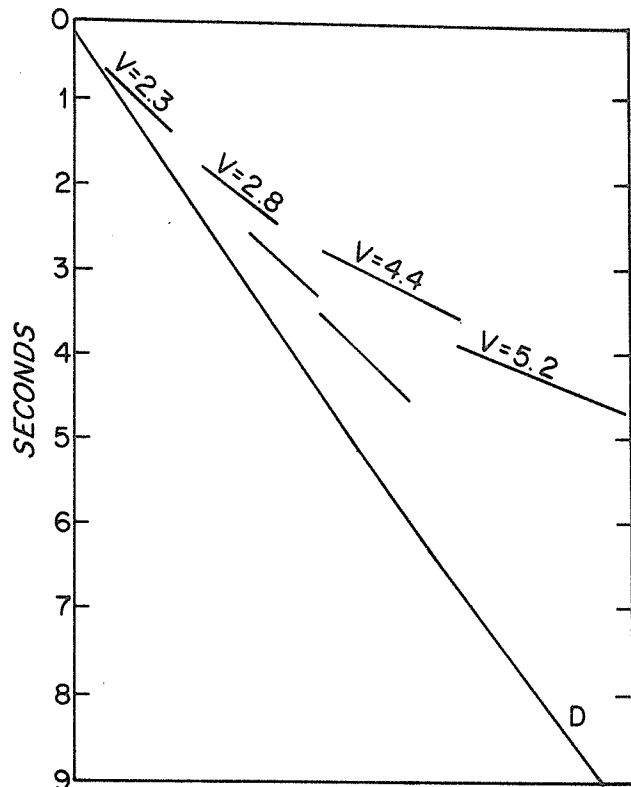
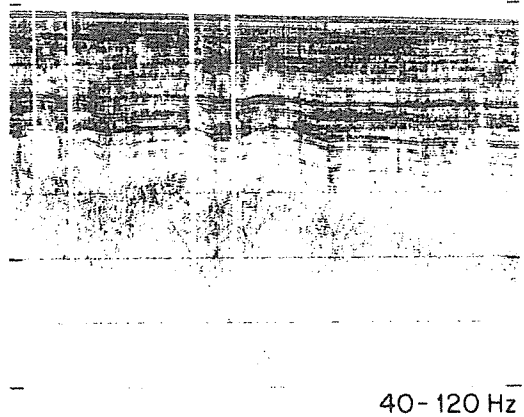
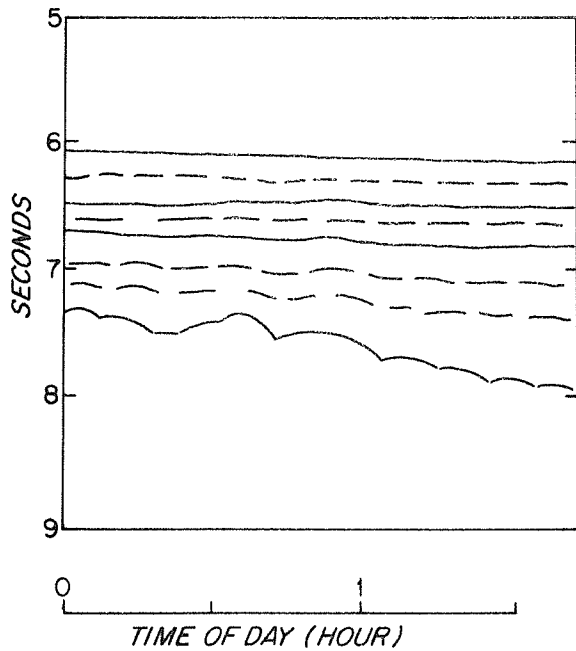
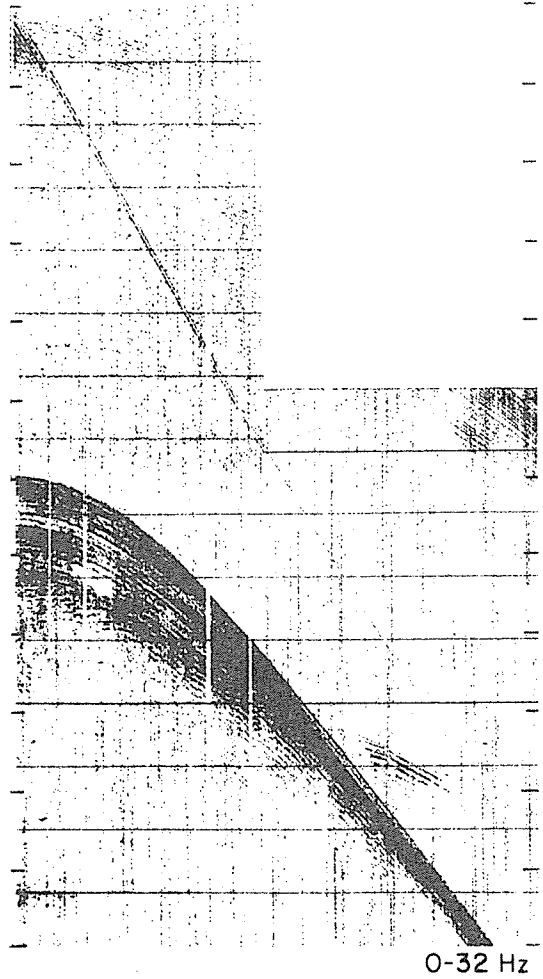
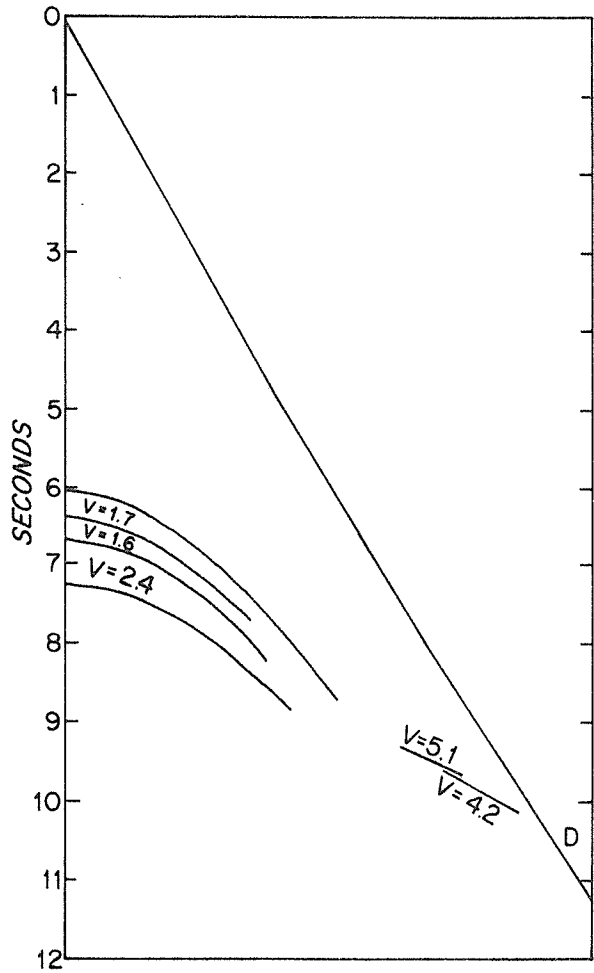


Figure 9. Sonobuoy and concurrent normal incidence profiles obtained from the continental rise west of Cape Town. These profiles show strong discrete horizons. The velocity in the shallow sediments were computed from the oblique reflections and that the deeper sedimentary horizon and basement from the refraction returns.



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Figure 10. Sonobuoy and concurrent normal incidence profile obtained from the continental shelf off Spanish Sahara and Mauritania. Only refraction returns were analyzed due to the shallowness of the water and the strong interference of the multiple water-column arrivals with the reflections from deeper interfaces. These velocity and depth determinations were used to identify horizons on the normal-incidence profile.



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Figure 11. Sonobuoy and concurrent normal-incidence profile from the southeast Canary Basin, southwest of the Canary Islands. This profile shows a thick sedimentary layer over the basement typical of an abyssal plain. Oblique reflections were used to compute horizons within the sediments while the basement velocity was determined from the refractions.

A more complete description of the data collection and analytical procedures may be found in Knott and Hoskins, A Guide for the Collection and Analysis of Seismic Refraction and Oblique Reflection Data Received by Sonobuoys, in preparation.

RESULTS

The following chronological tabulation was prepared from a card file of layer determinations made for each oblique reflection-refraction sonobuoy profile. Symbols used in this tabulation are:

- + layer velocity determined from refractions
- C layer velocity determined from critical seafloor reflection
- * estimated velocity
- ? questionable determination
- 1 basement

A positive dip indicates that the horizon is shoaling in respect to the sea surface along the course from the sonobuoy.

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH (+)=NORTH	LONGITUDE DEGREES (-)=WEST (+)=EAST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL0C KM/SEC	STD DEV VEL0C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL0C KM/SEC	REFRAC INTERC SEC	BASE MENT
1	A2 67	-36.147	+016.673	207	5.828 6.202 7.054	.6 .6 .6	1.50 1.68 2.10	.01 .05 .14	4.37 .31 .90	4.37 4.68 5.58			1
2	A2 67	-37.753	+015.298	221	6.470 6.977	.0 .0	1.50 2.17	.01 1.31	4.86 .55	4.86 5.41			1
3	A2 67	-37.793	+015.238	221	6.459 6.893 6.973	.0 2.4 2.4	1.50 2.16 3.00*	.00 .14 .00	4.86 .47 .09	4.86 5.32 5.41	5.70	6.973	1
4	A2 67	-38.610	+014.575	214	6.409 6.805	.0 .4	1.52 1.68	.01 .32	4.88 .33	4.88 5.21	3.90	6.498	1
5	A2 67	-40.997	+012.616	211	6.025 6.398 7.120 7.380 9.280	.1 .1 .1 .1 .1	1.50 2.33 3.01 3.83+ 4.20*	.01 .30 1.90 .00 .00	4.48 .47 1.09 .50 4.00	4.48 4.95 6.03 6.53 10.53	3.83	6.596	1
6	A2 67	-43.628	+010.527	207	5.936 6.144 6.416	.0 .0 -1.6	1.50 2.19 2.92	.01 .15 2.70	4.45 .23 .40	4.45 4.68 5.07	3.06	5.899	1
7	A2 67	-44.997	+009.603	087	6.027 6.599 6.750	.2 .2 .2	1.50 1.90 4.07+	.01 .10 .00	4.52 .54 .29	4.52 5.06 5.35	4.07	5.980	1
8	A2 67	-44.995	+009.895	088	6.103 6.676	.1 .1	1.50 2.10	.01 .28	4.57 .60	4.57 5.17	5.77	6.479	1
9	A2 67	-44.972	+011.507	095	6.544 6.674	2.6 2.6	1.50 3.80	.03 1.70	4.91 .25	4.91 5.16	5.53	6.572	1
11	A2 67	-44.958	+018.858	094	5.933 6.490 6.930	.6 .5 .5	1.50 2.40 3.29+	.01 .27 .00	4.44 .67 .70	4.44 5.11 5.81	3.29	5.680	1
12	A2 67	-43.285	+024.175	040	6.520 6.600	-2.1 -2.1	1.50 1.80*	.00 .00	5.26 .07	5.26 5.33	5.67	6.844	1
13	A2 67	-41.945	+024.903	355	4.757 5.210	2.4 .7	1.50 2.06	.01 .21	3.56 .47	3.56 4.03	5.40	5.258	
14	A2 67	-40.953	+024.943	345	4.061 4.304 4.660	.4 .4 .4	1.50 1.74 3.51+	.01 .60 .00	3.04 .21 .64	3.04 3.25 3.89	3.51	3.981	
15	A2 67	-39.920	+024.783	000	3.797 4.046	.4 .4	1.49 2.45	.00 .08	2.84 .31	2.84 3.14	4.32	4.472	
16	A2 67	-38.208	+024.925	000	5.663 6.329	.0 .0	1.50 2.01	.01 .29	4.25 .67	4.25 4.92	5.71	6.119	
17	A2 67	-37.612	+025.011	001	4.609 5.200	.5 .5	1.50 2.47	.02 .22	3.45 .73	3.45 4.18	5.16	5.239	
18	A2 67	-35.753	+024.878	024	6.193 6.896	.0 .0	1.51 2.75	.01 .96	4.67 .97	4.67 5.63	5.93	6.749	
19	A2 67	-34.338	+024.596	223	.153 .310 .770 1.570	.0 .4 .4 .4	1.52 1.80+ 2.13+ 3.00+	.00 .00 .00 .00	.11 .14 .48 1.20	.11 .25 .73 1.92			
20	A2 67	-34.858	+023.658	296	1.630 .260 .820	.4 .6 .6	3.53+ 1.51 1.80*	.00 .00 .00	.10 .19 .53	2.03 1.19 .72	5.67	1.188	1

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH	LONGITUDE DEGREES (-)=WEST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL@C KM/SEC	STD DEV VEL@C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL@C KM/SEC	REFRAC INTERC SEC	BASE MENT
21	A2 67	-34.845	+021.993	186	1.740	.6	2.26+	.00	.63	1.62	2.80	1.338	1
					2.140	.6	2.80+	.00	.57	2.25	3.44	1.796	
					3.320	.6	3.44+	.00	2.00	4.25	5.56	3.065	
					.130	-.1	1.51	.00	.10	.10			
					.190	-.1	1.80*	.00	.05	.15	2.30	.135	
					.430	-.1	2.30+	.00	.27	.42	2.52	.330	
22	A2 67	-35.553	+021.912	187	.870	-.1	2.52+	.00	.54	.96	3.11	.737	
					1.110	-.1	3.11+	.00	.38	1.34	3.70	.998	
					1.390	-.1	3.70+	.00	.50	1.84	4.31	1.283	
					.213	.0	1.51	.00	.16	.16			
					.430	.1	1.80*	.00	.20	.36	2.34	.330	
					1.390	.1	2.34+	.00	1.10	1.46	3.26	.895	
23	A2 67	-36.146	+021.820	181	1.140	.1	3.26+	.00	.06	1.52	3.54	.948	
					.268	.0	1.51	.00	.20	.20			
					.910	.2	2.00*	.00	.64	.84	2.77	.586	
					.990	.2	2.77+	.00	.10	.94	3.22	.663	
					1.290	.2	3.22+	.00	.49	1.43	4.09	.985	
					1.770	.2	4.09+	.00	.97	2.40	5.30	1.474	
25	A2 67	-38.442	+021.725	190	6.799	.0	1.50	.00	5.11	5.11			1
					6.948	.0	2.39	.29	.18	5.29	5.42	7.845	
					7.390	.0	5.42+	.00	1.20	6.49	6.41	6.965	
					6.847	.0	1.51	.01	5.15	5.15			
					7.156	.0	1.84	.28	.28	5.44	4.05	6.711	
					7.240	.0	4.05+	.00	.20	5.64	5.31	7.005	
27	A2 67	-39.007	+020.873	273	6.655	.0	1.50	.00	4.98	4.98			1
					6.800	.0	2.00*	.00	.15	5.13	4.98	6.563	
					6.331	.0	1.50	.01	4.75	4.75			
					7.339	.0	1.73	.82	.88	5.63	2.39	5.304	
					7.440	.0	2.39+	.00	.48	6.11	3.00	6.248	
					8.500	.2	3.00+	.00	1.50	7.61	5.50	8.064	
29	A2 67	-36.193	+020.297	045	.220	.0	1.51	.00	.17	.17			1
					.500	.0	1.80*	.00	.26	.42	2.28	.378	
					.860	.0	2.28+	.00	.36	.78	5.60	.787	
					.100	.0	1.51	.00	.08	.08			
					.220	.0	1.80*	.00	.10	.18	2.09	.148	
					.780	.0	2.09+	.00	.58	.75	3.19	.677	
30	A2 67	-34.982	+021.142	348	1.040	.0	3.19+	.00	.42	1.17	3.80	.951	
					1.220	.0	3.80+	.00	.34	1.52	4.03	1.126	
					1.320	.0	4.03+	.00	.19	1.61	4.47	1.234	
					1.760	.0	4.47+	.00	1.00	2.61	6.43	1.720	
					.242	-.1	1.50	.00	.20	.20			
					.590	-.1	1.80*	.00	.29	.49	2.13	.422	
31	A2 67	-35.288	+019.220	250	.730	-2.4	2.13+	.00	.14	.62	5.33	.697	1
					2.010	-2.4	5.33+	.00	3.40	4.03	6.33	1.968	
					4.143	-.5	1.49	.00	3.08	3.08			
					4.598	-.5	1.79	.07	.41	3.49			
					5.002	-.5	1.90	.11	.38	3.88			
					5.615	-.5	1.99	.27	.61	4.48	3.45	4.573	
32	A2 67	-35.567	+018.982	242	6.210	-.5	3.41+	.00	1.00	5.48	4.39	5.330	
					5.577	.6	1.50	.01	4.18	4.18			
					6.138	.6	1.93	.12	.54	4.72			
					7.557	.2	2.69	.20	1.24	5.95	6.97	7.406	
33	A2 67	-34.817	+016.183	060									1

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH (+)=NORTH	LONGITUDE DEGREES (-)=WEST (+)=EAST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL@C KM/SEC	STD DEV VEL@C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL@C KM/SEC	REFRAC INTERC SEC	BASE MENT
					5.402	.2	1.77	.15	.69	4.14	2.64	4.485	
					6.310	.2	3.08	.16	1.40	5.53	5.02	6.065	
35	A2 67	-34.240	+017.023	077	3.906	.0	1.49	.01	2.91	2.91			
					4.374	.0	1.88	.22	.44	3.35			
					5.110	.0	2.15	.17	.79	4.14	3.12	4.290	
					5.560	.0	3.12+	.00	.70	4.84	3.81	4.916	
					7.600	.0	3.81+	.00	4.00	8.84	7.16	7.276	1
36	A2 67	-32.163	+017.162	020	.305	.1	1.50	.00	.23	.23			
					.610	.1	2.00*	.00	.31	.54	3.00	.562	
					.920	.1	3.00*	.00	.47	1.01	4.27	.902	
					1.160	.1	4.27+	.00	.51	1.52	6.50	1.165	1
37	A2 67	-31.257	+012.133	071	5.358	.2	1.50	.00	4.01	4.01			
					6.922	.2	2.08	.07	1.62	5.64	3.52	6.159	
					7.360	.2	3.52+	.00	.77	6.41	5.50	6.974	1
38	A2 67	-30.737	+013.917	078	3.339	.4	1.49	.01	2.86	2.86			
					4.370	.4	2.27	.10	.60	3.46			
					5.514	.4	2.97	.26	1.70	5.16	3.32	4.645	
					6.970	.4	3.36	.91	2.45	7.61	6.00	6.412	1
39	A2 67	-30.130	+015.873	080	.265	.0	1.51	.00	.20	.20			
					.280	.0	1.70*	.00	.02	.22	1.95	.853	
					1.290	.0	1.95+	.00	.96	1.18	3.40	1.170	
					1.450	.0	3.40+	.00	.28	1.46	3.80	1.350	
					1.770	.0	3.80+	.00	.60	2.06	4.36	1.676	
					2.910	.0	4.36+	.00	.25	2.31	5.80	2.841	1
40	A2 67	-29.742	+016.865	328	.167	.0	1.50	.00	.13	.13			
					.220	.0	1.80*	.00	.05	.18	2.21	.168	
					1.980	.0	2.21+	.00	1.94	2.12	4.00	1.646	
41	A2 67	-28.865	+014.512	254	.295	.1	1.49	.00	.22	.22			
					.580	.1	1.80*	.00	.25	.46	2.32	.438	
					.900	.1	2.32+	.00	.37	.83	2.58	.737	
					1.900	.1	2.58+	.00	1.26	2.09	3.30	1.688	
42	A2 67	-29.832	+011.182	248	5.540	.1	1.50	.01	4.15	4.15			
					6.129	.6	1.94	.38	.57	4.72			
					6.520	.8	2.08	.43	.41	5.13	3.44	5.794	
					7.240	.8	3.44+	.00	1.30	6.43	6.00	6.888	1
43	A2 67	-27.403	+012.428	070	5.241	.5	1.50	.01	3.92	3.92			
					5.505	.5	1.68	.31	.22	4.14			
					5.772	1.8	2.01	.07	.27	4.73			
					6.340	1.8	2.22	.27	.63	5.04	3.32	5.575	
					7.040	1.8	3.32+	.00	1.20	6.24	5.34	6.606	
					7.680	1.8	5.34+	.00	1.70	7.94	7.30	7.388	1
44	A2 67	-26.938	+013.567	083	1.741	1.3	1.49	.01	1.30	1.30			
					2.955	1.3	2.22	.18	1.35	2.64	3.02	2.379	
					4.160	1.3	3.02+	.00	1.80	4.44	3.75	3.620	
					4.380	1.3	3.75+	.00	.40	4.84	4.77	3.974	
45	A2 67	-26.772	+014.143	082	.540	.1	1.49	.01	.40	.40			
					.848	.1	1.69	.83	.26	.66	2.41	.722	
					1.030	.0	2.41+	.00	.21	.87	2.63	.900	
					1.770	.0	2.63+	.00	.96	1.83	3.23	1.643	
					2.460	.0	3.23+	.00	1.10	2.93	4.22	2.392	
46	A2 67	-22.388	+013.305	000	.305	.0	1.49	.03	.22	.22			
					.998	.0	1.57	.85	.54	.76	2.34	.588	

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH (+)=WEST	LONGITUDE DEGREES (-)=WEST (+)=WEST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL@C KM/SEC	STD DEV VEL@C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL@C KM/SEC	REFRAC INTERC SEC	BASE MENT
					1.974	0	2.59+	.00	1.00	2.00	3.65	1.461	
					2.577	0	3.65+	.00	1.10	3.10	5.27	2.106	
					3.071	0	5.27+	.00	1.30	4.40	6.20	2.623	1
47	A2 67	-21.822	+013.283	000	.225	1	1.51	.00	.16	.16			
					.280	1	1.80+	.00	.05	.21	2.03	.175	
					.600	1	2.03+	.00	.32	.53	2.58	.470	
					1.220	1	2.58+	.00	.80	1.33	3.81	1.100	
					1.460	1	3.81+	.00	.44	1.77	4.64	1.350	
					2.420	1	4.64+	.00	2.20	3.97	7.08	2.350	1
48	A2 67	-21.622	+011.072	245	4.083	-5	1.49	.00	3.05	3.05			
					4.522	-5	1.86	.16	.41	3.45			
					4.723	-5	2.05	.08	.21	3.66			
					5.553	-5	2.71	.16	1.12	4.78	2.84	4.654	
49	A2 67	-22.322	+009.087	131	5.820	0	1.50	.00	4.36	4.36			
					6.113	0	2.11	.12	.31	4.67			
					6.339	0	2.19	.65	.25	4.99			
					6.651	8	2.37	.20	.37	5.29	2.50	5.219	
					7.400	3	2.51+	.00	1.00	6.29	4.47	6.971	1
50	A2 67	-22.858	+010.307	090	5.357	0	1.50	.00	4.01	4.01			
					5.670	0	2.14	.27	.33	4.35			
					9.190	0	2.22	1.10	1.39	5.74			1
51	A2 67	-22.818	+011.883	087	3.852	5	1.49	.01	2.87	2.87			
					4.831	5	2.05	.05	1.00	3.04	2.55	3.501	
					5.485	5	2.56	.50	.84	4.71	2.83	4.057	
					6.185	5	3.50	.57	1.23	5.94	5.18	5.682	
52	A2 67	-22.762	+013.058	086	.391	0	1.49	.02	.29	.29			
					.885	0	1.62	.69	.40	.69	1.87	.391	
					1.124	0	2.09	1.66	.25	.94	2.68	.954	
					1.979	0	2.68+	.00	2.00	2.94	5.30	2.578	
53	A2 67	-23.943	+012.608	248	2.667	-9	1.49	.00	1.98	1.98			
					3.715	-9	1.94	.06	1.02	3.00	2.86	3.340	
					5.286	-9	2.72	1.60	2.14	5.14	3.04	3.711	
					4.200	-9	3.04+	.00	.27	5.41	3.58	4.014	
					5.900	-9	3.58+	.00	3.00	8.41	4.60	4.400	1
54	A2 67	-24.310	+011.160	250	5.092	-10	1.50	.00	3.81	3.81			
					5.584	-10	1.86	.26	.46	4.27			
					6.086	-10	1.98	.16	.57	5.34	4.80	6.764	
					6.780	-10	4.80+	.00	.50	5.84	5.82	7.063	1
55	A2 67	-24.637	+009.898	255	5.832	0	1.50	.00	4.37	4.37			
					6.317	0	1.85	.07	.45	4.82	2.27	4.684	
					7.349	0	2.54	.38	1.31	6.13	3.57	6.308	
56	A2 67	-25.032	+008.208	250	6.251	-1	1.50	.00	4.70	4.70			
					7.075	-1	2.32	.30	.96	5.65	5.00	7.432	1
58	A2 67	-25.272	+007.160	253	4.453	-10	1.49	.00	3.32	3.32			
					4.876	-10	1.90	.32	.40	3.73	2.84	4.158	
					4.920	-10	2.84+	.00	.15	3.88	4.42	4.704	
59	A2 67	-25.393	+006.578	253	2.240	5	1.49	.01	1.68	1.68			
					2.270	5	2.00+	.00	.03	1.71	2.73	1.971	
					2.630	3.5	2.70	.29	.55	2.26	3.56	2.427	
60	A2 67	-24.698	+005.632	245	2.270	-7	1.49	.00	1.71	1.71			
					2.560	-7	1.85C	.00	.27	1.98	1.95	1.706	
					3.000	-7	1.95+	.00	.87	2.85	3.59	3.306	

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)*SOUTH	LONGITUDE DEGREES (-)*WEST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL0C KM/SEC	STD DEV VEL0C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL0C KM/SEC	REFRAC INTERC SEC	BASE MENT
62	A2 67	-26.748	+002.977	251	4.168	-1.1	1.95	.13	.41	3.21	4.48	4.248	1
					4.800	-1.1	4.48+	.00	1.60	4.81	5.90	4.910	
					5.819	.0	1.50	.01	4.37	4.37			
					6.202	-.6	1.73	.26	.33	4.70	4.84	6.047	
63	A2 67	-37.415	-005.762	070	6.540	-.6	4.84+	.00	.83	5.53	6.00	6.495	1
					4.756	-.6	1.49	.01	3.55	3.55			
					5.442	-.6	1.79	.05	.62	4.17			
					5.624	-.6	2.59	.19	.24	4.40	3.48	4.850	
64	A2 67	-35.378	+000.503	066	6.000	-.6	3.48+	.00	.78	5.19	5.46	5.601	1
					6.375	-.1	1.50	.01	4.78	4.78			
					6.846	-.1	2.05	.14	.48	5.27	6.36	6.822	
					6.347	.0	1.50	.01	4.77	4.77			
65	A2 67	-34.745	+002.373	067	6.756	.0	2.75	.78	.56	5.33	5.74	6.782	1
					5.717	.4	1.50	.00	4.28	4.28			
					6.745	.4	2.21	.55	1.12	5.40	4.20	6.030	
					7.000	.4	4.20+	.00	.65	6.15	5.07	6.466	
67	A2 67	-29.710	+011.677	323	5.586	-.2	1.50	.01	4.18	4.18			1
					6.913	-.4	2.19	.17	1.45	5.64			
					7.313	-.6	3.08	1.14	.62	6.23	5.35	6.438	
					7.740	-.6	5.35+	.00	2.30	8.56	6.15	7.371	
68	A2 67	-27.480	+009.605	324	6.533	.0	1.50	.01	4.91	4.91			1
					6.836	.0	1.92	.29	.29	5.20	4.55	6.718	
					.422	.5	1.49	.05	.31	.31			
					.732	1.0	1.57	.11	.24	.56	1.98	.346	
69	A2 67	-24.898	+013.738	071	.920	1.0	1.98+	.00	.19	.75	2.25	.672	1
					1.200	1.0	2.25+	.00	.28	1.03	2.96	.923	
					1.650	1.0	2.95+	.00	.68	1.71	6.31	1.629	
					1.736	-.8	1.49	.00	1.29	1.29			
70	A2 67	-21.436	+012.133	310	2.101	-.8	1.55	.17	.28	1.55			1
					3.373	-.8	2.07	.64	1.32	2.89	3.63	3.091	
					4.200	-.8	3.63+	.00	1.50	4.39	5.40	4.103	
					1.353	-.7	1.49	.01	1.01	1.01			
71	A2 67	-19.262	+011.156	223	2.359	-.6	1.89	.22	.95	1.95	2.21	1.532	1
					2.994	-.6	2.83	.41	.90	2.85			
					3.528	-.4	2.93	.28	.78	3.64	3.29	2.348	
					3.711	-.4	3.73	.43	.34	3.98	4.90	3.146	
72	A2 67	-20.167	+008.933	258	4.000	-.4	4.90+	.00	1.42	5.40	5.69	3.752	1
					3.074	.0	1.49	.01	2.29	2.29			
					3.733	.0	2.41	.10	.79	3.08			
					4.142	.0	2.80*	.00	.56	3.64	4.52	3.756	
73	A2 67	-20.492	+007.082	252	5.810	-.1	1.50	.02	4.35	4.35			1
					6.288	-.1	1.56	.86	.37	4.73	4.84	5.988	
					7.157	.0	1.51	.00	5.41	5.41			
					7.944	.0	1.95	.05	.77	6.17			
74	A2 67	-18.372	+006.001	087	8.223	.0	1.99	.20	.28	6.45	5.81	7.883	1
					7.435	.1	1.51	.01	5.61	5.61			
					8.176	.1	1.79	.06	.66	6.27			
					8.726	.1	2.56	.95	.70	6.98	6.04	8.425	
75	A2 67	-18.248	+006.823	087	4.993	-.3	1.50	.00	3.74	3.74			1
					6.032	-.3	1.61	.17	.85	4.57	2.62	4.900	
					6.404	-.3	2.53	1.32	.47	5.05			
					7.111	-.3	3.08	.56	1.09	6.14	3.63	6.073	

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					6.813	0	1.74	.17	.82	5.23			
					7.283	0	2.93	.20	.69	5.92	3.93	6.653	
					7.840	0	3.93+	.00	1.10	7.02	4.74	7.365	1
78	A2 67	-14.070	+007.250	004	6.694	0	1.51	.00	5.04	5.04			
					7.020	0	1.74	.15	.28	5.32			
					7.733	0	2.36	.05	.84	6.16	2.96	6.379	
79	A2 67	-13.862	+007.245	005	8.260	0	2.96+	.00	.83	6.99	4.50	7.396	1
					6.739	0	1.51	.00	5.08	5.08			
					7.628	0	1.80	.32	.80	5.88	6.27	7.635	1
80	A2 67	-10.357	+013.163	312	.140	0	1.51	.00	.11	.11			
					.230	0	1.70*	.00	.08	1.19	2.10	.152	
					.500	0	2.10+	.00	.28	1.47	2.49	.386	
					1.170	0	2.49+	.00	.84	2.31	3.33	1.030	
					2.100	0	3.33+	.00	1.50	3.81	5.50	1.972	1
81	A2 67	-10.223	+013.008	307	.153	0	1.51	.00	.11	.11	1.75	.221	
					.460	0	1.75+	.00	.26	.38	2.03	.304	
					.590	0	2.03+	.00	.13	.50	2.16	.415	
					.730	0	2.16+	.00	.16	.66	2.30	.546	
					1.090	0	2.30+	.00	.41	1.08	2.94	1.090	
					1.350	0	2.94+	.00	.37	1.44	3.45	1.371	
82	A2 67	-09.830	+012.812	023	.671	1.5	1.50	.06	.50	.50			
					1.492	1.5	2.22	.26	.91	1.41			
					1.795	1.5	2.34	.80	.35	1.77	3.21	1.888	
					2.430	1.5	3.21+	.00	1.10	1.87	4.90	2.084	
83	A2 67	-09.678	+012.857	022	.220	1	1.51	.00	.16	.16			
					.520	1	1.80*	.00	.27	.44	2.02	.350	
					1.430	1	2.02+	.00	.91	1.35	3.10	1.251	
					1.820	1	3.10+	.00	.60	1.94	3.83	1.674	
					1.960	1	3.83+	.00	.26	2.20	4.76	1.854	
84	A2 67	-09.527	+012.912	031	.013	2	1.51	.00	.10	.10			
					.600	2	1.80*	.00	.42	.52	2.15	.423	
					1.530	2	2.15+	.00	1.00	1.52	3.12	1.336	
					1.670	2	3.12+	.00	.23	1.75	4.57	1.577	
85	A2 67	-08.238	+013.163	255	.073	2	1.49	.00	.05	.05			
					.260	2	1.55*	.00	.15	.20	1.59	.081	
					.640	2	1.59+	.00	.30	.50	1.84	.360	
					.750	2	1.84+	.00	.10	.60	2.13	.518	
					1.420	2	2.12+	.00	.70	1.30	2.90	1.194	
86	A2 67	-08.363	+012.635	254	1.455	4	1.49	.01	1.09	1.09			
					1.859	4	1.60	.22	.32	1.41	2.16	1.523	
					2.430	4	2.16+	.00	.64	2.05	3.00	2.333	
					2.960	4	3.00+	.00	1.50	3.51	4.57	3.506	
					3.660	4	4.57+	.00	1.60	5.11	7.59	4.330	
87	A2 67	-08.507	+012.150	254	2.338	2	1.49	.00	1.74	1.74			
					2.680	2	1.53	.11	.26	2.00			
					3.900	12	2.00*	.00	1.20	3.20	4.54	3.886	
88	A2 67	-09.180	+012.020	171	2.615	6	1.49	.01	1.95	1.95			
					3.194	6	1.78	.20	.51	2.46	3.60	2.350	
89	A2 67	-10.208	+012.227	171	2.261	0	1.49	.01	1.68	1.68			
					2.732	0	1.73	.14	.41	2.09	2.50	2.147	
					3.292	0	2.37	.52	.66	2.76			
					4.625	0	2.77	.23	1.84	4.60	3.91	4.148	

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					3.058	.4	2.05	.80	.53	2.42	2.29	2.249	
					3.300	.4	2.25+	.00	.29	2.71	3.23	2.890	
					3.620	.4	3.23+	.00	.52	3.23	5.28	4.719	
91	A2 67	-11.358	+012.428	171	2.060	.0	1.49	.00	1.55	1.55			
					2.230	.0	1.60*	.00	.13	1.67	1.83	1.256	
					2.590	.0	1.83+	.00	.29	1.96	2.54	2.029	
					4.200	.0	2.54+	.00	2.00	3.97	5.70	3.982	
92	A2 67	-13.530	+012.027	241	3.583	.5	1.49	.01	2.67	2.67			
					3.765	.5	1.63	.20	.15	2.82			
					4.396	.5	1.78	.17	.56	3.38			
					4.747	.5	1.86	.32	.33	3.71	2.48	3.619	
					5.400	.5	2.49+	.00	.82	4.53	3.24	4.433	
93	A2 67	-13.812	+011.467	243	4.314	.2	1.50	.01	3.23	3.23			
					4.983	.2	1.81	.06	.61	3.83	2.45	4.077	
					5.100	.2	2.45+	.00	1.40	5.23	3.46	5.168	
					5.750	.2	3.46+	.00	1.10	6.33	5.35	6.112	
94	A2 67	-15.192	+008.913	244	5.969	.2	1.50	.01	4.49	4.49			
					6.837	.2	1.77	.42	.77	5.25			
					7.205	.2	2.55	.41	.47	5.72	2.82	5.918	
95	A2 67	-15.740	+007.791	240	6.738	.2	1.51	.00	5.08	5.08			
					7.583	.2	1.99	.27	.84	5.92	6.25	7.938	1
96	A2 67	-16.748	+005.892	238	7.158	.0	1.51	.00	5.40	5.40			
					7.982	.0	1.54	.40	.63	6.04	6.38	8.116	1
97	A2 67	-09.072	+002.021	067	7.498	.0	1.51	.00	5.62	5.62			
					7.500	.0	1.80*	.00	.10	5.72	5.25	7.402	1
98	A2 67	-08.448	+004.567	060	7.104	.1	1.51	.00	5.36	5.36			
					7.367	.1	1.93	.39	.25	5.62			
					7.798	.1	2.08	.25	.45	6.06			
					8.100	.0	3.00*	.00	.50	6.56	7.02	8.062	1
99	A2 67	-07.815	+005.593	060	6.729	.2	1.51	.00	5.07	5.07			
					7.280	.2	1.89	.45	.52	5.59	2.13	5.074	
					8.067	.1	2.15	.10	.85	6.44	6.15	7.963	1
100	A2 67	-06.582	+007.088	064	6.132	.2	1.50	.00	4.61	4.61			
					6.821	.2	1.74	.12	.60	5.21	2.13	4.693	
					8.433	.2	2.17	.82	1.75	6.96	3.53	7.100	
					8.870	.2	3.53+	.00	.78	7.74	4.73	7.848	
101	A2 67	-05.668	+008.987	242	4.879	.3	1.50	.00	3.65	3.65			
					5.591	.3	1.73	.05	.62	4.27			
					6.405	.3	1.72	.19	.70	4.97			
					6.950	.3	2.22	.21	.61	5.76	3.51	6.299	
					9.146	.3	2.50	.32	2.74	8.32	7.28	9.068	1
102	A2 67	-06.260	+008.752	071	5.088	.2	1.50	.00	3.81	3.81			
					6.310	.2	1.92	.15	1.17	4.99			
					6.969	.2	2.15	.10	.71	5.69			
					8.297	.2	2.83	.05	1.88	7.57	4.32	7.792	
105	A2 75	+14.890	-021.847	115	4.393	.2	1.50	.01	3.73	3.73			
					5.417	.2	1.77	.31	.38	4.11			
					5.636	.2	2.32	.23	.25	4.36			
					6.790	.2	2.96	.28	1.71	6.07			
106	A2 75	+14.790	-021.683	119	5.517	.0	1.50	.01	4.14	4.14			
					5.935	.0	1.96	.22	.41	4.55			
					7.056	.0	2.25	.44	1.26	5.82	4.07	6.687	1

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					5.460	.5	1.80	.31	.51	4.18			
					6.532	.5	2.30	.18	1.23	5.42	3.58	5.857	
					7.564	.5	3.51	.28	1.81	7.22			1
108	A2 75	+12.893	-021.113	256	6.352	.1	1.51	.00	4.78	4.78			
					7.286	.1	1.72	.64	.80	5.58	3.65	6.619	
					8.040	3.4	3.65+	.00	1.60	7.18	5.30	7.905	1
109	A2 75	+10.833	-022.470	180	6.879	.1	1.51	.01	5.19	5.19			
					7.340	.1	2.11	.13	.49	5.68			
					7.955	3.6	3.30	.28	1.02	6.69	5.76	8.014	1
110	A2 75	+07.190	-020.002	146	5.365	.0	1.49	.00	4.00	4.00			
					6.365	.0	2.28	.26	1.14	5.14			
					6.677	.0	4.00	2.94	.62	5.76			
					6.950	.0	4.50*	.00	.90	6.66	5.80	6.804	1
111	A2 75	+04.940	-019.422	150	6.027	.0	1.50	.00	4.53	4.53			
					6.408	.0	1.76	.14	.34	4.87			
					6.944	.9	2.73	.22	.73	5.60	5.75	6.748	1
112	A2 75	+03.023	-017.820	123	6.589	.1	1.50	.00	4.95	4.95			
					7.227	.1	2.00	.57	.64	5.59	5.10	6.950	1
113	A2 75	-00.933	-001.322	079	6.596	.0	1.51	.00	4.97	4.97			
					7.413	.0	2.11	.12	.86	5.83	4.01	6.761	
					8.000	.0	4.01+	.00	1.30	7.13	6.32	7.718	1
114	A2 75	+00.533	+001.877	057	6.164	.1	1.50	.00	4.64	4.64			
					7.069	.1	1.95	.42	.88	5.52	5.29	6.873	1
115	A2 75	+01.210	+004.480	060	5.212	.1	1.50	.01	3.91	3.91			
					5.696	.1	1.83	.17	.44	4.35			
					6.468	.1	2.07	.20	.80	5.15	5.60	6.051	1
116	A2 75	+02.143	+006.796	067	4.035	.3	1.49	.00	3.01	3.01			
					4.555	.3	1.64	.12	.43	3.44			
					6.657	.3	2.39	.06	1.95	5.92	4.29	6.265	
117	A2 75	+02.487	+007.617	059	3.280	.1	1.49	.00	2.45	2.45			
					3.770	.1	1.45	.11	.49	2.94	2.17	2.843	
					4.719	.1	1.95	.06	.95	3.89	3.21	3.973	
					5.540	.1	3.21+	.00	.82	5.71	5.62	5.083	1
118	A2 75	+03.690	+009.175	320	.045	.0	1.54	.00	.04	.04			
					.310	.0	1.60*	.00	.21	.25	1.81	.182	
					.850	.0	1.81+	.00	.49	.74	2.28	.650	
					1.100	.0	2.28+	.00	.29	1.03	2.65	.919	
					1.620	.0	2.65+	.00	.68	1.71	3.28	1.449	
					2.700	.0	3.28+	.00	1.80	3.51	5.62	2.642	1
119	A2 75	+03.165	+006.830	210	1.788	.3	1.49	.00	1.33	1.33			
					2.074	.0	1.51	.23	.22	1.55			
					2.726	.0	2.09	.11	.68	2.23			
					2.816	.0	2.40*	.00	.10	2.33	2.65	2.564	
120	A2 75	+03.233	+005.742	337	2.636	.7	1.49	.00	1.96	1.96			
					3.316	.7	1.45	.10	.49	2.46			
					3.847	.7	2.19	.09	.58	3.04	2.68	3.086	
					4.500	.7	2.68+	.00	1.00	4.04	3.59	4.057	
122	A2 75	+04.290	+004.395	213	.085	.3	1.54	.00	.07	.07			
					.410	.1	1.70*	.00	.28	.35	1.84	.264	
					1.200	.1	1.84+	.00	.70	1.05	2.16	.877	
					3.000	.1	2.16+	.00	2.00	3.05	3.21	2.713	
124	A2 75	+02.552	+002.527	353	5.761	.1	1.50	.00	4.33	4.33			

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125	A2 75	+04.018	+002.380	353	7.801	••1	2.99	.26	1.17	6.75	6.07	7.714	1
					5.407	•1	1.50	.01	4.06	4.06			
					6.307	•1	1.56	.16	.70	4.76			
					8.303	•1	2.30	.33	2.29	7.05			
					9.135	•1	3.26	.85	1.35	8.40			
126	A2 75	+04.093	+002.380	353	5.353	•1	1.50	.00	4.02	4.02			
					6.823	•1	2.00	.12	1.47	5.48	2.67	5.260	
					7.398	•1	2.53	.79	.73	6.21			
					8.300	•1	3.00*	.00	1.40	7.61	3.46	6.942	
					9.400	•2	3.46+	.00	1.80	9.41	5.39	8.394	1
127	A2 75	+05.485	+002.158	355	4.234	•9	1.50	.00	3.17	3.17			
					5.010	•9	1.64	.06	.63	3.80			
					6.100	•9	3.07	.41	1.67	5.47	3.25	5.546	
					6.900	•9	3.24+	.00	2.40	7.87	4.03	6.163	
					7.200	•9	4.03+	.00	.60	8.47	5.65	7.764	1
128	A2 75	-03.633	+000.733	170	6.019	•0	1.50	.01	4.52	4.52			
					7.167	•0	2.03	.22	1.16	5.69			
					7.785	•0	2.35	.72	.73	6.41			
					8.668	•0	2.71	.99	1.19	7.61			1
129	A2 75	-03.547	+000.753	169	6.083	•0	1.50	.01	4.57	4.57			
					6.586	•0	2.16	.62	.54	5.11			
					7.396	•0	2.45	.91	.99	6.11			
					8.204	•0	2.86	2.57	1.15	7.26	2.93	6.242	
					8.442	•0	3.67	2.11	.44	7.70			1
130	A2 75	-00.242	+006.530	063	4.114	•5	1.49	.00	3.07	3.07			
					4.525	•5	1.67	.14	.34	3.42			
131	A2 75	-01.633	+007.702	175	3.783	••9	1.49	.00	2.82	2.82			
					4.288	••9	1.64	.05	.42	3.24			
					5.129	••9	2.04	.04	.86	4.09	2.70	4.012	
					6.093	••9	2.80	.20	1.35	5.44	4.05	5.161	
					6.900	••9	4.05+	.00	2.00	7.44	5.93	6.245	1
132	A2 75	-02.957	+009.857	242	.065	•0	1.52	.00	.05	.05			
					.170	•0	1.80*	.00	.10	.15	2.57	.158	
					.340	•0	2.57+	.00	.18	.33	2.89	.802	
					1.440	•0	2.89+	.00	1.66	1.99	3.05	1.285	
					1.800	•0	3.05+	.00	.53	2.52	5.38	1.751	
133	A2 75	-04.303	+007.153	235	5.895	••4	1.50	.01	4.43	4.43			
					6.640	••4	1.82	.67	.68	5.11	2.12	4.633	
					7.561	••4	2.18	.18	1.00	6.11			
					8.520	••4	3.11	1.74	1.49	7.60	5.10	7.712	1
134	A2 75	-04.633	+006.583	235	6.157	••8	1.50	.00	4.63	4.63			
					6.398	••8	1.54	.21	.19	4.81			
					6.922	••8	2.02	.08	.53	5.34			
					8.001	••8	2.35	.15	1.27	6.61	6.69	8.287	1
135	A2 75	-05.428	+004.013	268	6.885	••2	1.51	.00	5.18	5.18			
					7.280	••2	1.96	.38	.39	5.57			
					7.637	••2	2.16	.27	.28	5.84			
					7.800	••2	2.30*	.00	.30	6.14	6.07	7.463	1
136	A2 75	-03.000	-002.017	355	6.607	••5	1.51	.00	4.98	4.98			
					6.929	••5	1.70	.44	.27	5.25	4.20	6.574	1
137	A2 75	-00.350	-002.413	355	6.751	•0	1.51	.00	5.09	5.09			
					7.017	•0	1.64	.26	.22	5.31			

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138	A2 75	+02.155	-002.527	000	6.758 6.990 8.051 8.755 5.094	.0 .0 .0 .0 -1.0	1.51 2.03 2.12 2.59 1.50	.00 .18 .16 .42 .00	5.09 .24 1.13 .91 3.82	5.09 5.33 6.46 7.37 3.82		6.392		
139	A2 75	+03.840	-005.343	183	5.784 7.009 7.360 8.000	-1.0 -1.0 -1.0 -1.0	1.71 2.05 3.96+ 4.22+	.11 .05 .00 .00	.59 1.25 .71 1.60	4.41 5.66 6.37 7.97	2.21 3.96 4.22 5.31	4.655 6.567 6.969 7.911	1	
140	A2 75	+05.617	-010.173	135	.090 .160 .660	.0 .0 .0	1.54 2.00* 3.49+	.00 .00 .00	.07 .06 .87	.07 .13 1.00		3.49 4.87	.143 1.643	
141	A2 75	+06.230	-010.892	208	.075 .160 .400 .870	.0 .0 .0 .0	1.54 1.80* 2.34+ 2.79+	.00 .00 .00 .00	.07 .07 .33 .66	.07 .14 .47 1.13		2.34 2.79 3.51	.113 .359 .816	
142	A2 75	+05.135	-011.375	212	1.270 4.862 5.713 6.125 6.978	.0 -.5 -.5 -.5 .4	3.51+ 1.50 1.64 2.20 2.75	.00 .00 .09 .16 .17	.70 3.64 .57 .45 1.17	4.27 3.64 4.21 4.66 5.84	4.27 3.76	1.218 5.894		
143	A2 75	+04.833	-011.547	212	7.600 5.198 5.745 6.239 7.130 7.240 7.430	.4 -.3 -.3 -.3 -.3 -.3 -.3	3.76+ 1.50 1.52 2.03 2.72 4.02+ 4.83+	.00 .00 .07 .11 .45 .00 .00	3.10 3.90 .42 .50 1.21 .60 1.40	6.94 3.90 4.31 4.81 6.02 6.62 8.02	5.60 3.18 4.02 4.83 6.47	7.780 5.570 6.513 6.956 7.711	1	
144	A2 75	+03.812	-012.105	212	5.883 6.627 7.973	-.1 -.1 -.1	1.50 1.94 3.05	.00 .21 .32	4.42 .72 2.05	4.42 5.14 7.19	2.93 5.33	6.038 7.742	1	
145	A2 75	+02.460	-012.858	210	6.538 7.002 7.325 7.744 8.205	.0 .0 .0 .0 .0	1.51 2.08 2.11 2.67 3.82	.00 .54 .22 .20 1.16	4.92 .48 .34 .56 .88	4.92 5.41 5.75 6.31 7.19				1
146	A2 75	+03.547	-014.488	312	6.310 7.020 7.290 7.600	-.1 -.1 -.1 -.1	1.51 1.60 2.28 5.50+	.00 .14 .16 .00	4.76 .56 .30 .77	4.76 5.32 5.62 6.39	5.50 6.46	7.100 7.380	1	
147	A2 75	+04.363	-015.088	030	6.568 7.345 7.654 7.804	.0 .0 3.6 3.6	1.51 2.31 2.68 5.23+	.00 1.05 1.64 .00	4.95 .90 .41 .43	4.95 5.85 6.26 6.69	6.29	7.352 7.628	1	
148	A2 75	+05.833	-014.237	032	6.270 6.763 7.406 7.933	.1 .1 .1 .1	1.51 1.70 2.40 3.06	.01 .33 .19 .31	4.72 .42 .77 .81	4.72 5.14 5.91 6.72	5.68	7.766	1	
149	A2 75	+06.840	-013.547	039	5.260 5.919 6.248 7.620	1.2 1.2 1.2 1.2	1.50 1.80 2.21 3.00*	.00 .04 .66 .00	3.95 .59 .36 1.50	3.95 4.54 4.90 6.40	5.30	7.401	1	

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					0070	0	1.80*	00	001	006	2.29	059	
					0190	0	2.29+	00	014	020	2.79	170	
151	A2 75	+06.962	-014.107	248	5.526	05	1.50	01	4.15	4.15			
					6.490	05	1.76	11	085	5.00			
					7.056	05	2.14	27	061	5.60			
					7.810	05	3.50*	00	1.40	7.01	6.22	7.677	1
152	A2 75	+06.520	-015.008	249	6.358	01	1.51	00	4.79	4.79			
					6.743	01	1.68	04	032	5.11			
					7.375	01	1.87	17	059	5.70	2.74	6.245	
					8.000	01	2.74+	00	1.95	7.65	4.25	8.317	
153	A2 75	+05.647	-016.590	245	6.598	00	1.51	00	4.97	4.97			
					7.184	00	1.85	05	054	5.52			
					7.818	26	2.57	32	081	6.33	6.44	7.853	1
154	A2 75	+04.838	-018.300	243	6.618	00	1.51	00	4.99	4.99			
					7.385	00	2.01	25	077	5.76			
					8.018	00	3.86	130	1.22	6.98	7.18	8.072	1
155	A2 75	+04.268	-019.415	243	6.255	19	1.51	00	4.71	4.71			
					6.668	32	1.83	15	038	5.09			
					7.223	67	2.05	83	057	5.65			
156	A2 75	+03.903	-019.980	311	6.087	01	1.50	00	4.58	4.58			
					6.453	01	1.74	14	032	4.90			
					6.882	01	2.17	27	046	5.36			
					7.612	01	3.16	16	1.15	6.52	4.96	7.103	
					7.892	01	4.96+	00	071	7.23	7.25	7.572	1
157	A2 75	+04.367	-020.577	312	5.041	17	1.50	01	3.78	3.78			
					5.719	17	1.99	12	068	4.45	4.24	5.435	
					6.229	17	4.23+	00	1.08	5.53	5.50	6.085	1
158	A2 75	+04.820	-021.088	314	3.698	08	1.49	00	2.76	2.76			
					4.144	08	1.80	41	040	3.16	2.25	3.242	
					4.489	08	2.58	71	044	3.61	2.90	3.585	1
159	A2 75	+05.475	-021.778	312	4.638	09	1.50	00	3.47	3.47			
					5.223	09	1.72	15	050	3.98			
					5.394	09	1.98	20	017	4.15	2.30	4.102	
					5.630	09	2.30+	00	027	4.42	4.10	5.414	
					6.190	09	4.10+	00	1.20	5.62	5.70	6.116	1
160	A2 75	+06.663	-023.170	058	4.848	00	1.50	00	3.63	3.63			
					5.385	08	1.71	36	046	4.09			
					5.750	08	2.49	16	045	4.55			
					5.975	08	2.80	61	031	4.86	5.16	6.200	1
161	A2 75	+07.445	-021.928	068	4.558	00	1.50	00	3.41	3.41			
					5.111	00	2.02	13	056	3.97	2.96	4.560	
					5.603	00	2.96	17	073	4.70	3.48	4.880	
					5.973	00	3.48+	00	064	5.34	4.01	5.391	
					6.773	00	4.01+	00	1.60	6.94	5.94	6.389	1
162	A2 75	+08.300	-020.247	060	5.678	00	1.50	01	4.27	4.27			
					5.978	00	1.82	12	027	4.54			
					6.201	00	2.70	29	030	4.84			
					6.980	00	3.80*	00	041	5.25	4.61	6.924	1
163	A2 75	+08.585	-019.758	055	5.863	01	1.50	00	4.41	4.41			
					6.124	01	1.67	11	022	4.63	2.96	5.522	
					7.095	01	3.15	40	1.53	6.15			
164	A2 75	+09.133	-018.860	055	6.199	02	1.51	00	4.67	4.67			

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					6.725	.2	1.77	.17	.15	5.11	2.55	5.640	
					7.026	.2	2.49	.27	.37	5.48			
					7.730	.2	2.60*	.00	.86	6.34	3.76	7.166	
					8.780	.2	3.76+	.00	2.00	8.34	4.37	8.333	1
165	A2 75	+09.945	-017.767	002	1.633	-.6	1.50	.01	1.22	1.22			
					2.302	-.6	1.75	.14	.59	1.81			
					2.834	-.6	2.32	.18	.62	2.42	3.80	2.722	
					3.800	-.6	3.80+	.00	1.84	4.26	6.40	3.727	1
166	A2 75	+10.730	-017.773	005	3.815	-.2	1.50	.00	2.85	2.85			
					4.558	-.2	1.82	.05	.68	3.53			
					5.279	-.2	1.84	.08	.66	4.19			
					6.068	-15.7	3.64	.20	1.44	5.63			
167	A2 75	+11.163	-018.670	026	5.734	.0	1.50	.00	4.31	4.31			
					6.496	.0	1.92	.28	.73	5.04	2.42	5.259	
					7.427	.0	2.45	.21	1.14	6.18			
					7.771	.0	3.46	.77	.60	6.78			
					8.300	.0	4.00*	.00	1.00	7.78	6.17	7.920	1
168	A2 75	+12.638	-017.942	024	3.863	-4.4	1.50	.00	2.89	2.89			
					4.487	-4.4	1.80	.18	.56	3.45	2.30	4.405	
					5.106	-4.4	2.31	.18	.72	4.17	2.70	4.467	
					5.800	-4.4	2.70+	.00	1.20	5.37	5.30	5.789	1
169	A2 75	+13.208	-017.715	000	1.768	-.9	1.50	.00	1.32	1.32			
					2.040	-.9	1.70*	.00	.23	1.55	2.00	1.579	
					3.204	-.6	1.93	.13	1.17	2.73	3.50	3.080	
					3.800	-.6	3.50+	.00	.70	3.43	4.50	3.421	
170	A2 75	+13.728	-017.377	275	.115	.0	1.51	.00	.09	.09	2.15	.075	
					.360	.0	2.15+	.00	.27	.36	2.74	.405	
					.670	.0	2.74+	.00	.42	.78	2.92	.897	
					1.070	.0	2.92+	.00	.56	1.34	4.25	1.676	
171	A2 75	+13.712	-017.968	279	3.578	-1.9	1.50	.00	2.68	2.68			
					4.513	-1.9	1.97	.04	.92	3.60			
					6.133	-1.9	2.84	.38	2.30	5.90	3.60	5.418	
172	A2 75	+13.797	-020.020	274	5.780	-.2	1.50	.00	4.35	4.35			
					6.516	-.2	1.95	.12	.72	5.06			
					6.788	-.2	2.01	.32	.27	5.34	3.50	6.197	
					7.499	-.2	2.95	.50	1.05	6.39	5.40	7.260	1
173	A2 75	+13.857	-022.242	278	5.926	.0	1.50	.00	4.46	4.46			
					6.334	.0	1.57	.12	.32	4.78			
					6.695	.0	2.15	.23	.39	5.16			
					7.114	1.4	2.12	.20	.44	5.61	5.82	7.047	1
174	A2 75	+13.903	-023.843	350	5.828	.2	1.50	.00	4.38	4.38			
					6.002	.2	1.60	.14	.14	4.52			
					6.318	.2	1.72	.27	.27	4.79			
					6.637	.2	2.14	.28	.34	5.14			
					6.989	2.2	2.56	1.01	.45	5.59	5.00	6.591	
					7.130	2.2	5.00+	.00	.36	5.95	5.20	6.839	1
175	A2 75	+14.660	-024.023	354	5.109	.9	1.50	.01	3.83	3.83			
					5.677	.9	1.80	.48	.51	4.34			
					6.485	.9	2.48	.23	1.00	5.34			
					8.547	.9	4.34	.83	4.48	9.82			1
176	A2 75	+15.957	-024.367	346	5.189	.1	1.50	.01	3.90	3.90			
					5.948	-.3	1.78	.16	.68	4.58	2.70	4.666	

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177	A2 75	+17.858	-024.753	100	7.100	-3.2	3.20*	.00	.39	6.01	4.90	6.029	1
					4.908	.3	1.50	.00	3.69	3.69			
					5.649	.8	1.43	.22	.53	4.21	3.30	5.466	
178	A2 75	+17.613	-023.782	104	5.800	.8	3.30+	.00	.25	4.46	6.20	5.464	1
					4.748	.1	1.50	.01	3.57	3.57			
					5.060	.1	1.59	.41	.25	3.81			
					5.607	.1	1.85	.22	.50	4.32	4.31	5.388	
179	A2 75	+16.707	-020.528	105	5.800	.1	4.31+	.00	.41	4.73	4.70	5.618	1
					4.743	.1	1.50	.00	3.56	3.56			
					5.431	.1	2.14	.17	.74	4.30			
					6.219	.1	2.31	.11	.91	5.21			
					6.364	.1	2.88	.00	.21	5.42			
					6.314	.1	3.51	.19	.79	6.21			
180	A2 75	+16.327	-019.187	100	7.200	.1	4.20*	.00	.77	6.98	5.64	6.493	1
					4.622	.2	1.50	.00	3.47	3.47			
					5.177	.2	1.48	.07	.41	3.88			
					5.748	.2	1.55	.41	.44	4.32	2.41	4.359	
					6.527	.2	2.26	.25	.88	5.20	3.14	5.293	
					7.168	.2	3.47	4.12	1.11	6.31	4.67	6.209	
181	A2 75	+15.897	-017.500	103	7.600	.2	4.67+	.00	.99	7.31	6.09	6.952	1
					3.278	1.3	1.50	.00	2.45	2.45			
					3.675	1.3	1.78	.09	.35	2.81			
					4.411	1.3	2.05	.15	.75	3.56	2.85	3.442	
182	A2 75	+15.753	-016.987	106	4.850	1.3	2.85+	.00	.62	4.18	4.30	4.308	
					.155	.2	1.51	.00	.12	.12			
					.260	.2	1.80*	.00	.09	.21	1.97	.168	
					.510	.2	1.97+	.00	.25	.46	2.41	.610	
					.790	.2	2.41+	.00	.34	.80	3.18	.648	
					.940	.2	3.18+	.00	.25	1.05	3.47	.851	
183	A2 75	+17.115	-016.643	045	1.850	.2	3.47+	.00	1.60	2.65	6.25	1.800	1
					.135	.0	1.50	.00	.10	.10			
					.400	.0	1.80*	.00	.24	.34	2.04	.200	
					1.210	.0	2.04	.00	.81	1.15	2.84	.875	
184	A2 75	+17.537	-016.525	318	2.710	.0	2.84	.00	2.10	3.25	4.11	2.286	1
					.188	.3	1.51	.00	.14	.14			
					1.180	.3	1.70*	.00	.87	1.01	1.82	.075	
					1.320	.3	1.82+	.00	.13	1.14	2.01	.180	
					1.750	.3	2.01+	.00	.43	1.57	2.48	.559	
					2.290	.3	2.48+	.00	.68	2.25	2.98	1.082	
185	A2 75	+17.932	-016.990	281	2.285	-1.3	1.50	.00	1.71	1.71			
					2.687	-1.3	1.46	.06	.29	2.00			
					3.792	-1.3	1.68	.11	.93	2.93	2.30	2.476	
186	A2 75	+18.108	-018.170	288	3.858	.0	1.50	.00	2.89	2.89			
					4.617	.0	1.89	.08	.72	3.61	2.17	3.263	
					4.940	.0	2.06	.39	.33	3.94			
					5.330	.0	2.21	.50	.43	4.37	2.89	4.605	
					5.750	.0	2.89+	.00	.61	4.98	3.99	5.417	
187	A2 75	+19.430	-023.992	275	5.535	.1	1.51	.00	4.17	4.17			
					5.845	.1	1.63	.18	.25	4.42			
					6.326	.1	1.92	.10	.46	4.48			
					6.790	.1	2.61	.13	.60	5.49	5.51	6.857	1
188	A2 75	+21.105	-024.442	110	6.473	.1	1.51	.01	4.90	4.90			

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH	LONGITUDE DEGREES (-)=WEST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL0C KM/SEC	STD DEV VEL0C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL0C KM/SEC	REFRAC INTERC SEC	BASE MENT
189	A2 75	+20.433	-021.715	108	7.040	.1	3.20*	.00	2.80	8.30	3.65	6.273	
					5.428	.2	1.51	.00	4.09	4.09			
					5.771	.2	1.53	.13	.26	4.35			
					6.020	.2	2.18	.54	.27	4.62			
					6.595	.2	2.34	.16	.67	5.29	2.80	5.365	
					6.869	.2	2.82	1.79	.39	5.68	3.44	6.026	
					7.265	.2	3.55	2.51	.70	6.38			
					7.700	.2	4.00*	.00	.86	7.24	6.34	7.279	1
190	A2 75	+20.153	-020.910	105	5.080	.3	1.50	.00	3.82	3.82			
					5.478	.3	1.55	.31	.31	4.13			
					6.037	.3	2.10	.21	.59	4.71	2.99	5.527	
					6.300	.3	3.04	.19	.40	5.11			
					6.880	.3	4.00*	.00	.42	5.53	4.11	6.278	
191	A2 75	+20.873	-019.813	097	4.533	.1	1.50	.00	3.40	3.40			
					4.840	.1	1.73	.07	.27	3.67			
					6.059	.1	2.13	.07	1.30	4.97			
					6.851	.1	3.09	.29	1.22	6.19	4.52	6.232	
					7.269	.1	4.28	4.16	.89	7.09			
192	A2 75	+19.812	-019.170	082	4.096	.4	1.50	.00	3.07	3.07			
					4.434	.4	1.82	.09	.31	3.38			
					5.384	.4	1.95	.10	.93	4.31	3.30	4.624	
					5.805	.4	3.32	.82	.70	5.01			
193	A2 75	+19.818	-018.315	082	3.288	.8	1.50	.00	2.46	2.46			
					3.839	.8	1.84	.13	.51	2.97			
					4.272	.8	2.07	.09	.45	3.41	2.23	2.964	
					5.036	.8	2.47	.43	.95	4.36	2.93	3.912	
					5.435	.8	3.01	.74	.60	4.96			
194	A2 75	+19.835	-017.790	088	2.171	.9	1.50	.01	1.62	1.62			
					2.448	.9	1.63	.35	.22	1.85			
					2.762	.9	1.89	.25	.30	2.15			
					3.455	.4	2.30	.38	.80	2.94			
					4.600	.4	3.70*	.00	2.11	5.05	5.00	4.057	
195	A2 75	+19.843	-017.220	297	.085	-1.3	1.51	.00	.06	.06			
					.290	-1.3	1.80*	.00	.20	.26	2.10	.241	
					1.021	-1.3	2.10*	.00	.77	1.03	2.94	.925	
196	A2 75	+20.187	-017.598	358	.133	.0	1.51	.00	.10	.10	1.93	.076	
					.320	.0	1.93*	.00	.19	.29	2.36	.248	
					.580	.0	2.36*	.00	.31	.60	2.80	.496	
					.790	.0	2.80*	.00	.30	.90	3.21	.709	
					2.100	.0	3.20*	.00	2.10	3.00	4.46	1.965	1
197	A2 75	+20.345	-017.615	358	.105	.0	1.51	.00	.08	.08			
					.440	.0	2.00*	.00	.34	.42	2.67	.373	
					.950	.0	2.66*	.00	.69	1.11	3.14	.849	
					1.960	.0	3.14*	.00	1.56	2.67	4.15	1.829	1
198	A2 75	+20.622	-017.527	028	.090	.9	1.51	.00	.07	.07			
					.170	.4	2.00*	.00	.08	.15	2.51	.163	
					1.210	.4	2.51*	.00	1.30	1.45	3.67	1.159	
199	A2 75	+20.735	-017.442	028	.085	.0	1.51	.00	.06	.06			
					.100	.0	2.00*	.00	.02	.08	2.74	.096	
					.660	.0	2.74*	.00	.76	.84	3.05	.585	
200	A2 75	+20.958	-017.402	358	.095	.1	1.51	.00	.07	.07			
					.130	.1	2.00*	.00	.04	.11	2.41	.115	

SR #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH (+)=NORTH	LONGITUDE DEGREES (-)=WEST (+)=EAST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VELOC KM/SEC	STD DEV VELOC KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL ₀ C KM/SEC	REFRAC INTERC SEC	BASE MENT
201	A2 75	+20.343	-017.457	280	.140	-1.5	1.51	.00	.11	.11			
					.310	-1.5	1.80*	.00	.16	.27	2.12	.200	
					.630	-1.5	2.12+	.00	.34	.61	2.45	.486	
					1.560	-1.5	2.45+	.00	1.12	1.73	3.70	1.401	
202	A2 75	+21.485	-019.103	286	4.448	.4	1.50	.00	3.34	3.34			
					4.935	.4	2.00	.15	.49	3.82			
					5.828	.4	2.32	.06	1.03	4.86			
					6.575	.4	2.93	1.29	1.10	5.95	4.17	6.037	
					6.700	.4	4.17+	.00	.25	6.20	4.74	6.249	
203	A2 75	+21.616	-020.703	280	5.585	.2	1.51	.00	4.21	4.21			
					6.000	.2	1.95	.66	.40	4.62			
					6.548	.2	2.16	.66	.59	5.21			
					7.199	.2	2.61	.49	.85	6.06			
					7.513	.2	3.50	3.55	.55	6.61	4.30	7.228	
					8.140	.2	4.30+	.00	1.84	8.45	5.30	7.733	1
204	A2 75	+21.760	-021.815	300	5.986	.2	1.51	.00	4.52	4.52			
					6.547	.2	1.98	.18	.56	5.07			
					7.110	.2	2.27	1.23	.64	5.71	3.11	6.209	
					7.669	.1	2.68	.74	.75	6.46			1
205	A2 75	+28.015	-022.533	113	6.548	.4	1.51	.00	4.95	4.95			
					6.957	.4	1.84	.05	.38	5.33			
					7.755	.4	2.67	.54	1.06	6.39	4.08	6.991	
					7.900	.6	4.08+	.00	.30	6.99	4.78	7.295	
					8.900	.6	4.73+	.00	2.40	9.39	6.51	8.477	1
206	A2 75	+26.157	-017.840	116	4.720	.0	1.51	.00	3.55	3.55			
					5.115	.0	1.86	.27	.37	3.92			
					5.244	.7	2.01	.14	.13	4.05			
					6.134	.7	2.43	.57	1.08	5.13	3.46	5.386	
					6.713	.7	3.52	1.04	1.02	6.15	4.32	6.107	1
207	A2 75	+25.958	-017.405	101	4.657	.0	1.51	.00	3.51	3.51			
					5.528	.0	1.90	.61	.83	4.33			
					6.549	.0	2.97	.31	1.52	5.85	3.48	5.377	
					7.000	.0	3.48+	.00	.76	6.61	4.59	6.197	
208	A2 75	+24.023	-016.158	294	.058	.0	1.51	.00	.03	.03			
					.140	.0	1.80*	.00	.06	.09	2.30	.098	
					.401	.0	2.30+	.00	.31	.40	2.81	.337	
					1.300	.0	2.81+	.00	1.24	1.64	4.39	1.202	
					1.950	.0	4.39+	.00	1.43	3.07	5.18	1.846	1
209	A2 75	+24.398	-017.420	294	3.103	.5	1.50	.00	2.33	2.33			
					3.994	.5	1.94	.05	.86	3.20			
					4.903	.5	2.42	.24	1.10	4.29			
					5.645	-1.7	2.91	.78	1.08	5.37	3.50	4.524	
					5.900	-1.7	3.50+	.00	.38	5.76	3.80	4.814	
210	A2 75	+23.762	-017.643	138	5.486	1.0	1.50	.01	4.11	4.11			
					7.010	1.0	2.40	.10	1.83	5.95	2.80	3.218	
					8.019	1.0	2.87	.24	1.45	7.39	5.70	5.380	1
211	A2 75	+23.347	-017.297	137	1.400	.6	1.51	.01	1.06	1.06			
					2.094	.6	1.81	.05	.63	1.68	1.93	1.030	
					2.512	.6	1.93	.09	.40	2.08			
					3.400	.6	2.80*	.00	1.25	3.33	5.10	3.291	1
212	A2 75	+22.983	-017.113	138	.102	.0	1.51	.00	.08	.08			
					.270	.0	1.80*	.00	.15	.23	2.44	.201	

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH	LONGITUDE DEGREES (-)=WEST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL0C KM/SEC	STD DEV VEL0C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL0C KM/SEC	REFRAC INTERC SEC	BASE MENT
					1.390	0	3.04+	0.00	1.04	1.79	4.60	1.304	
213	A2 75	+22.917	-017.093	293	1.860	0	4.60+	0.00	1.07	2.86	5.27	1.363	1
					.138	0	1.51	0.00	.10	.10			
					.210	0	1.80*	0.00	.06	.16	2.88	.167	
					.900	0	2.88+	0.00	1.01	1.17	3.30	.801	
214	A2 75	+23.017	-017.877	298	1.640	0	3.30+	0.00	1.22	1.39	4.10	1.515	
					3.118	-7	1.50	0.00	2.34	2.34	1.93	2.277	
					3.897	-7	1.92	.07	.75	3.09			
					4.786	-7	2.32	.15	1.03	4.12	3.10	4.020	
					5.026	-7	3.33	.49	.40	4.52			
					5.900	-7	3.60*	0.00	1.57	6.09	4.30	5.559	
215	A2 75	+23.420	-018.460	297	6.200	-7	4.30+	0.00	.65	6.74	4.80	5.657	
					3.899	-4	1.50	0.00	2.93	2.93			
					4.304	-4	1.72	.19	.35	3.28	1.90	2.567	
					4.540	-4	1.96	.10	.23	3.51			
					5.148	-4	2.50	.22	.76	4.27	2.60	3.929	
216	A2 75	+23.667	-019.195	295	6.148	-4	2.86	.51	1.43	5.70	3.50	5.518	
					4.508	-6	1.51	0.00	3.39	3.39			
					4.952	-6	1.73	.16	.38	3.78	1.91	3.044	
					5.456	-6	2.02	.61	.51	4.28	2.40	4.357	
					6.080	-6	2.12	.15	.66	4.95	3.80	5.961	
217	A2 75	+23.948	-019.930	294	6.710	-6	3.77	1.31	1.19	6.14	4.40	6.191	
					4.983	-2	1.51	0.00	3.76	3.76			
					5.809	-2	1.67	.16	.69	4.44			
					6.539	-2	2.17	.30	.79	5.24	3.19	5.912	
					6.963	-2	3.39	1.93	.72	5.96	4.50	6.299	
					7.300	-2	4.50+	0.00	.76	6.72	6.20	7.107	1
218	A2 75	+24.528	-021.632	292	6.083	-2	1.51	0.01	4.60	4.60			
					6.419	-2	1.68	.13	.28	4.88			
					6.674	-2	1.63	.23	.21	5.09			
					7.226	-1.8	2.43	.28	.55	5.64	4.20	6.838	
219	A2 75	+24.863	-022.587	293	7.620	-1.8	4.20+	0.00	.83	6.61	5.10	7.333	1
					6.433	-1	1.51	0.00	4.86	4.86			
					7.042	-1	1.79	.07	.54	5.40			
					7.409	-1	2.18	.16	.40	5.80	2.86	6.355	
					8.139	-9.6	3.60	.87	1.31	7.12	5.00	7.836	1
220	A2 75	+25.067	-023.128	292	6.635	0	1.51	0.00	5.02	5.02			
					7.173	0	1.83	.08	.49	5.51			
					7.487	0	1.95	.52	.31	5.82			
					7.941	1.6	2.69	.59	.61	6.43	5.10	7.407	1
221	A2 75	+25.707	-025.037	296	6.855	0	1.51	0.00	5.19	5.19			
					7.080	2.5	1.80*	0.00	.20	5.30	5.40	6.795	1
223	A2 75	+28.048	-029.558	029	6.533	-1.4	1.51	0.01	4.94	4.94			
					6.738	-1.4	1.84	1.28	.19	5.13	3.00	6.106	
					6.870	-1.4	3.00+	0.00	.22	5.35	4.20	6.724	1
224	A2 75	+28.602	-029.225	031	6.373	0	1.51	0.01	4.82	4.82			
					6.842	0	1.97	.26	.46	5.28	3.71	6.241	
					6.950	0	3.71+	0.00	.21	5.79	5.44	7.028	1
225	A2 75	+30.330	-027.220	070	6.353	0	1.51	0.00	4.80	4.80			
					6.570	-11.9	2.80*	0.00	.31	5.11	3.10	6.262	1
226	A2 75	+30.715	-025.992	072	7.271	0	1.52	0.00	5.52	5.52			
					7.601	-4.0	1.86	.97	.31	5.82	2.50	6.453	

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH (+)=NORTH	LONGITUDE DEGREES (-)=WEST (+)=EAST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL@C KM/SEC	STD DEV VEL@C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL@C KM/SEC	REFRAC INTERC SEC	BASE MENT
227	A2 75	+31.067	-024.888	066	7.138 7.347 8.010	.0 -2.6 -2.6	1.52 2.78 3.00+	.00 .15 .00	5.41 .29 .99	5.41 5.70 6.69			
228	A2 75	+31.557	-024.040	029	7.178 7.477	.0 1.9	1.52 2.36	.01 .44	5.44 .35	5.44 5.80	3.00 5.50	6.467 7.578 6.205 7.133	1 1
229	A2 75	+32.617	-023.385	029	7.162 7.405 7.787 8.100 8.400	.0 .0 .0 .0 .0	1.52 2.14 2.57 3.88+ 5.20+	.00 .24 1.25 .00 .00	5.43 .26 .49 .60 .78	5.43 5.69 6.18 6.78 7.56		5.928 7.008 7.677 8.181	1
230	A2 75	+33.500	-022.782	029	7.130 7.403 7.614	.0 -7 -3.2	1.52 1.67 1.87	.00 .23 .45	5.41 .23 .20	5.41 5.63 5.83			
231	A2 75	+34.675	-021.987	107	6.896 7.199 7.530 7.918	.0 .0 .0 18.1	1.52 1.86 2.77 4.31	.00 .19 1.23 2.62	5.22 .28 .46 .84	5.22 5.51 5.97 6.80	4.50 4.36	7.721 6.845	1
232	A2 75	+34.100	-020.285	109	6.854 7.225	.0 -7.2	1.52 3.18	.00 4.10	5.19 .59	5.19 5.78			1
234	A2 75	+33.572	-018.703	113	5.818 6.103 6.243 6.270	.6 .0 -3.1 -3.1	1.51 1.65 2.04 2.70*	.00 .15 .11 .00	4.39 .24 .14 .04	4.39 4.63 4.77 4.81		6.215	
236	A2 75	+33.090	-017.417	108	4.583 4.846 5.509	.8 1.1 5.9	1.51 1.93 2.12	.01 .49 .12	3.45 .25 .70	3.45 3.70 4.41	3.60 7.20	6.215 5.324	1
237	A2 75	+32.505	-015.630	114	5.718 6.348 6.843	.2 -1.0 2.5	1.51 2.10 2.62	.00 .07 .29	4.32 .66 .65	4.32 4.98 5.63		6.220	1
238	A2 75	+31.948	-014.178	109	5.723 6.065 6.457 6.731 7.169	.3 .3 .3 .3 .3	1.51 1.50 2.30 2.48 2.99	.00 .20 1.29 .00 .32	4.32 .26 .45 .34 .65	4.32 4.57 5.02 5.37 6.02			1
239	A2 75	+31.850	-013.913	105	5.468 5.704 6.236 6.586 6.931 7.308	1.0 1.0 1.0 1.0 1.0 10.8	1.51 1.69 1.77 2.80 4.06+ 5.00+	.00 .15 .12 .66 .00 .00	4.12 .20 .47 .49 .23 .82	4.12 4.32 4.80 5.29 5.52 6.34		5.265 6.227 6.507 6.829	1
240	A2 75	+31.463	-012.540	107	4.391 4.591 5.095 5.421 6.330	.0 .0 .0 .0 .0	1.50 1.75 2.26 2.78 2.99	.00 .73 .26 1.30 .06	3.30 .18 .57 .45 1.36	3.30 3.48 4.05 4.50 5.86		5.545	
241	A2 75	+31.027	-011.263	116	3.043 3.625 4.183 4.532 4.920	.8 .8 .8 .8 .8	1.50 1.88 2.38 2.57 3.20*	.00 .21 1.27 .83 .00	2.29 .55 .66 .45 .63	2.29 2.83 3.50 3.95 4.58		4.459	
243	A2 75	+30.483	-011.900	276	2.818 3.357	.6 .6	1.50 1.77	.01 .51	2.12 .48	2.12 2.60	2.57	2.752	

SB #	SHIP & CRUISE	LATITUDE DECIMAL	LONGITUDE DEGREES	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL@C KM/SEC	STD DEV VEL@C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL@C KM/SEC	REFRAC INTERC SEC	BASE MENT
		(-)=SOUTH	(+)=WEST										
244	A2 75	+29.505	-012.085	139	4.638	.6	2.57	.53	1.13	4.22	4.20	4.145	1
					4.890	.6	4.20+	.00	.52	4.74	7.20	6.165	
					2.306	.5	1.50	.01	1.73	1.73			
					2.645	.5	1.91	.85	.32	2.06			
					3.012	.5	2.09	.38	.38	2.44	2.58	2.332	
245	A2 75	+28.757	-011.460	138	3.411	.5	2.33	.71	.46	2.91			1
					3.755	.5	2.84	.85	.49	3.39	3.30	3.155	
					4.340	.5	3.30+	.00	.96	4.35	5.00	4.171	
					.100	.0	1.51	.00	.08	.08			
					.150	.0	2.00*	.00	.05	.13	2.56	.131	
246	A2 75	+28.612	-011.650	272	.440	.0	2.56+	.00	.41	.54	3.57	.405	
					.570	.0	3.57+	.00	.24	.78	4.00	.538	
					.880	.0	4.00+	.00	.31	1.09	4.33	.691	
					.078	.0	1.52	.00	.07	.07			
					.320	.0	2.00*	.00	.24	.31	3.06	.271	
247	A2 75	+28.607	-011.960	280	.860	.0	3.06+	.00	.83	1.14	4.64	.815	
					.093	.1	1.52	.00	.07	.07			
					.100	.1	2.00*	.00	.01	.08	2.53	.088	
					.180	.1	2.53+	.00	.16	.24	3.06	.208	
					.230	.1	3.06+	.00	.16	.40	3.27	.305	
248	A2 75	+28.695	-012.698	285	.500	.1	3.27+	.00	.97	1.37	4.87	.889	
					.373	.5	1.51	.00	.28	.28	1.77	.185	
					.670	.5	1.77+	.00	.31	.59	2.18	.510	
					.910	.5	2.18+	.00	.39	.98	2.62	.869	
					1.160	.5	2.62+	.00	.58	1.56	3.11	1.314	
249	A2 75	+28.215	-013.672	172	1.290	.5	3.11+	.00	.41	1.97	3.47	1.593	
					1.928	.3	1.50	.01	1.45	1.45			
					2.094	.3	1.89	.21	.16	1.61			
					2.419	.3	1.97	.11	.32	1.93			
					2.765	.3	1.81	.14	.31	2.24	2.52	2.095	
250	A2 75	+27.262	-013.667	310	3.369	.2	2.24	.10	.68	2.92	3.07	2.670	
					.470	.4	1.51	.00	.37	.37			
					.710	.3	1.60*	.00	.17	.54	1.70	.394	
					1.120	.4	1.70+	.00	.43	.97	1.90	.859	
					2.641	.4	1.50	.01	1.98	1.98			
251	A2 75	+27.575	-014.160	314	2.936	.4	1.51	.13	.22	2.21			
					3.156	.4	1.95	.76	.21	2.42	2.27	2.330	
					3.884	.4	2.35	.87	.86	3.28	2.70	3.164	
					4.182	.4	2.80	.30	.42	3.69			
					4.560	.4	3.20*	.00	.45	4.14	3.80	4.108	
252	A2 75	+28.358	-015.053	316	4.220	.5	1.50	.00	3.17	3.17			
					4.474	.5	2.20	.42	.28	5.45			
					4.595	.7	2.33	.64	.14	5.59			
					4.915	.4	2.58	.50	.41	6.01	3.00	4.461	
					4.806	.0	1.51	.00	3.62	3.62			
253	A2 75	+28.665	-015.418	317	5.243	.0	2.04	.21	.44	4.06			
					6.179	.0	2.28	.17	1.07	5.13			
					6.719	.7	4.40	2.04	1.19	6.32			
					4.875	.0	1.50	.00	3.67	3.67			
					5.188	.0	1.72	.16	.27	3.94	2.42	4.107	
254	A2 75	+29.123	-016.047	314	5.720	.0	2.27	.07	.61	4.54	2.53	4.344	
					6.248	.0	2.49	.13	.66	5.20			

SB #	SHIP & CRUISE	LATITUDE DECIMAL (-)=SOUTH	LONGITUDE DEGREES (-)=WEST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL@C KM/SEC	STD DEV VEL@C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL@C KM/SEC	REFRAC INTERC SEC	BASE MENT
255	A2 75	+29.905	-017.023	317	5.403	-0.7	1.51	.01	4.07	4.07			
					5.993	.7	1.81	.08	.53	4.51			
					6.362	-1.9	2.32	1.00	.43	4.93			
					6.942	-12.5	3.73	1.16	1.08	6.01	4.10	6.448	1
256	A2 75	+30.838	-018.108	058	6.111	.8	1.51	.00	4.62	4.62			
					6.831	.1	1.73	.14	.63	5.24			
					7.537	-10.0	3.24	.33	1.14	6.39	4.00	6.724	
					8.072	-10.0	3.58	1.74	.96	7.34	6.60	8.475	1
257	A2 75	+31.527	-016.883	124	5.919	.0	1.51	.01	4.47	4.47			
					6.601	.0	2.13	.14	.73	5.20			
					7.106	-2.7	2.28	.41	.58	5.77			
					7.355	-1.7	3.66	1.53	.45	6.23	3.73	6.784	
259	A2 75	+30.752	-015.518	124	5.223	1.8	1.51	.01	3.94	3.94			
					6.135	1.8	1.68	.32	.76	4.70	2.30	4.401	
					6.540	1.8	2.42	.18	.49	5.19	3.17	5.560	
					7.084	3.1	3.10	1.62	.84	6.03	5.60	6.636	1
260	A2 75	+30.298	-014.767	122	3.973	1.8	1.50	.00	2.99	2.99			
					4.271	.5	2.07	.18	.31	3.30			
					5.346	-11.5	2.99	.25	1.61	4.91	3.20	4.768	
					6.200	-11.5	3.20+	.00	1.44	6.35	4.10	5.452	
261	A2 75	+29.743	-013.587	120	3.635	2.5	1.50	.01	2.73	2.73			
					3.972	2.5	1.71	.12	.29	3.02	1.96	2.490	
					4.179	2.5	1.96	.49	.20	3.22			
					4.525	2.5	2.15	.21	.37	3.60	2.70	3.635	
					5.185	2.5	2.82	2.43	.93	4.53	4.60	4.992	1
262	A2 75	+29.398	-012.827	124	2.247	.0	1.50	.02	1.69	1.69			
					2.883	.0	1.93	.16	.61	2.30			
					3.189	.0	2.14	.24	.33	2.63	2.42	2.439	
					3.642	-2.4	2.58	.36	.58	3.22			
					4.455	-2.4	3.07	.08	1.25	4.46	4.40	4.116	1
263	A2 75	+28.952	-012.028	122	.172	.0	1.51	.00	.13	.13	2.11	.146	
					.380	.0	2.11+	.00	.22	.35	2.37	.323	
					.480	.0	2.37+	.00	.12	.47	2.68	.426	
					.940	.0	2.68+	.00	.62	1.09	3.85	.901	
					1.810	.0	3.84+	.00	1.66	1.75	6.23	1.789	1
264	A2 75	+30.527	-012.082	043	2.551	.2	1.50	.01	1.92	1.92			
					3.065	.6	1.91	.17	.49	2.41			
					3.552	.9	2.69	.87	.65	3.07	3.50	3.103	
					4.312	-4.4	3.50+	.00	.22	3.28	4.00	3.949	
265	A2 75	+30.275	-011.732	162	3.033	.0	1.50	.01	2.28	2.28			
					3.563	.0	2.02	.05	.54	2.82	2.60	2.977	
					4.067	.0	2.32	.15	.59	3.40			
					4.496	.0	3.33	.24	.72	4.12	3.69	3.862	
266	A2 75	+31.857	-010.068	067	.161	.0	1.51	.00	.13	.13	2.25	.155	
					.400	.0	2.25+	.00	.26	.39	2.58	.360	
					1.020	.0	2.58+	.00	.80	1.19	3.43	.952	
					1.680	.0	3.43+	.00	1.13	2.32	5.51	1.649	1
267	A2 75	+31.888	-010.022	302	.180	.0	1.51	.00	.14	.14	2.42	.168	
					1.310	.0	2.42+	.00	1.36	1.50	3.22	1.181	
					2.150	.0	3.22+	.00	1.34	2.84	4.41	2.037	1
268	A2 75	+32.428	-011.232	306	4.628	.0	1.51	.01	3.48	3.48			
					5.082	.0	1.78	.28	.40	3.89			

SB #	SHIP & CRUISE	LATITUDE DECIMAL (+) SOUTH (-) WEST	LONGITUDE DEGREES (-) WEST	COURSE IN DEG	TRAVEL TIME SECS	LAYER DIP DEG	LAYER VEL@C KM/SEC	STD DEV VEL@C KM/SEC	LAYER THICK KM	TOTAL THICK KM	REFRAC VEL@C KM/SEC	REFRAC INTERC SEC	BASE MENT
					6.093	.0	2.73	.20	.64	5.25			
					6.627	.0	2.84	.33	.76	6.01			
					7.134	.0	4.26	2.58	1.08	7.09			1
269	A2 75	+32.838	-012.142	302	5.185	-.8	1.50	.01	3.90	3.90			
					5.646	-.9	1.81	.21	.42	4.32	2.42	4.721	
					6.169	-.9	2.24	1.11	.59	4.90	3.07	5.488	
					6.898	3.0	3.05	.26	1.11	6.01	5.00	6.522	1
270	A2 75	+33.067	-013.788	065	5.918	.0	1.51	.00	4.47	4.47			
					6.598	.0	1.66	.10	.57	5.03			
					7.019	.0	2.65	.12	.56	5.59	2.98	5.951	
					7.370	-3.8	3.16	.17	.56	6.15			
					8.200	-3.8	4.50*	.00	1.40	7.55	5.00	8.422	
271	A2 75	+34.003	-012.622	063	5.915	.0	1.51	.00	4.47	4.47			
					6.553	.0	1.77	.16	.56	5.03			
					7.102	.0	2.51	.08	.69	5.72			
					7.995	-4.6	4.36	.95	1.95	7.67	4.90	7.527	1
272	A2 75	+34.130	-012.293	060	5.928	.0	1.51	.01	4.48	4.48			
					6.597	.0	2.03	.27	.68	5.16	2.29	5.131	
					7.134	.0	2.13	.35	.57	5.73	3.20	6.428	
					7.995	.0	3.01	.20	1.30	7.02			
					8.124	-2.5	4.50	1.90	2.28	9.30	4.90	7.954	1
273	A2 75	+34.478	-011.408	063	5.936	.0	1.51	.00	4.48	4.48			
					6.766	.0	2.07	.15	.86	5.34			
					7.419	.0	2.50	.21	.82	6.16			
					8.051	.0	3.96	1.33	1.25	7.41	4.37	6.693	
274	A2 75	+34.408	-009.952	122	5.738	.0	1.51	.00	4.33	4.33			
					6.384	.0	1.65	.31	.53	4.86			
					6.718	.0	2.15	.13	.36	5.22	3.29	6.158	
					7.526	2.1	3.15	3.15	1.28	6.50	3.84	6.859	
					7.993	-4.1	3.71	.44	.87	7.36			
277	A2 75	+34.858	-008.485	352	4.153	.0	1.50	.01	3.12	3.12			
					4.257	1.1	1.62	.65	.08	3.21			
					4.653	1.8	1.99	.56	.39	3.60	2.40	3.327	
					4.790	1.8	2.40+	.00	2.69	6.29	4.00	6.629	1
278	A2 75	+35.405	-010.420	351	5.580	.6	1.51	.01	4.21	4.21			
					5.998	2.3	1.77	.52	.37	4.58			
					6.405	1.7	2.22	.09	.45	5.03			
					6.943	1.7	2.42	.51	.65	5.68	3.00	5.561	
					7.240	1.7	3.28	.84	.49	6.17	4.70	6.693	
					7.640	1.7	4.70+	.00	.35	6.52			1

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Grateful acknowledgment is made to the officers and crew of the R/V ATLANTIS II, especially to their conscientious responses to the query, "Will traffic permit us to maintain course and speed for the next three hours and will any ship run down the buoy if we launch it here?"

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